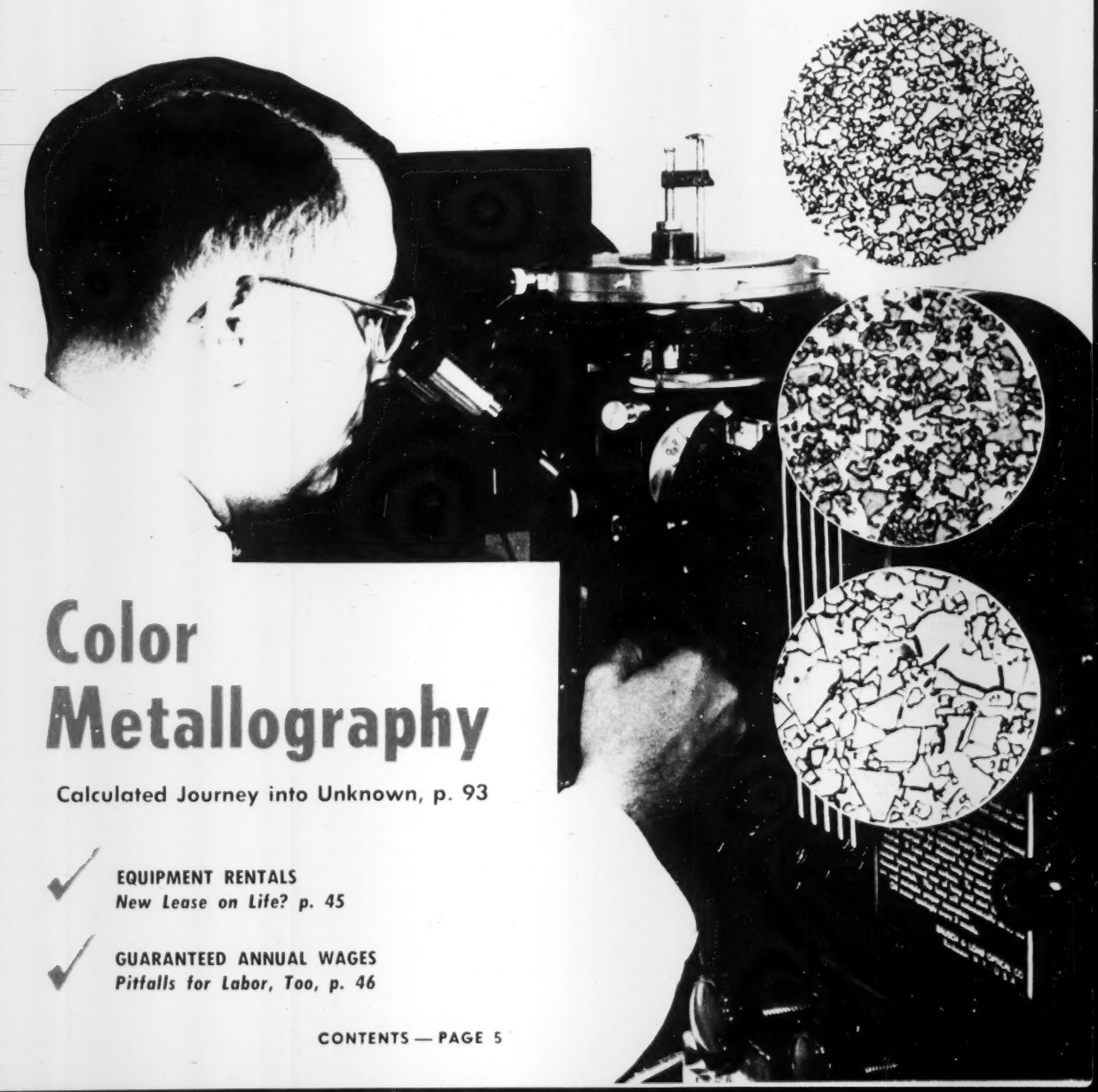
OCTOBER 19, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



Color Metallography

Calculated Journey into Unknown, p. 93

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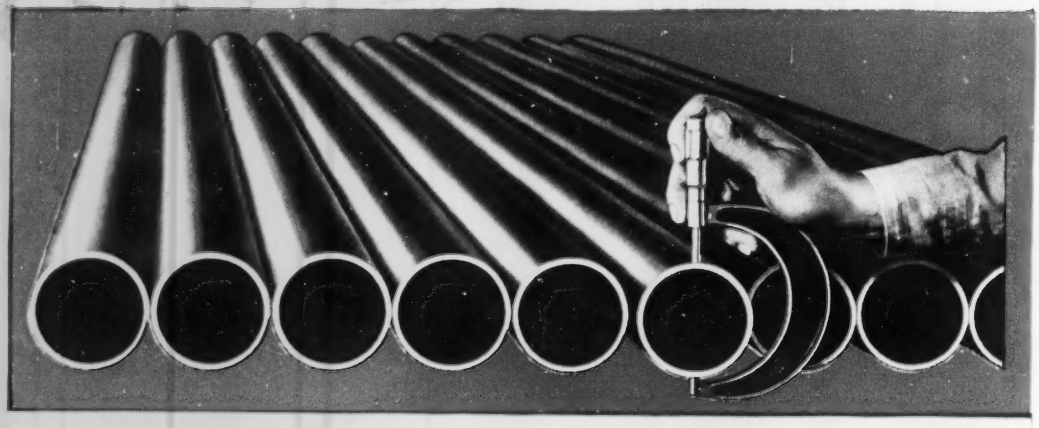
B&W *ERW Carbon Steel Mechanical Tubing*

UNIFORM FROM TUBE TO TUBE



Uniform wall thickness and concentricity permit the frequent use of tubing in the "as is" condition, even for such rotating parts as conveyor rolls, thus eliminating costly machining operations. Fabricators who insist upon B&W Electric-Resistance-Welded Carbon Steel Mechanical Tubing *know* that they can use standard methods of joining, forming, and fabrication with complete assurance of uniform workability.

B&W ERW Tubing may be supplied *cold-rolled* or *hot-rolled*. Cold-rolled tubing is recommended where close limits are required on gage and inside diameter, where superior quality finish is necessary for plating, polishing or lacquering, or where close control of hardness or temper is desired. For most operations not involving these requirements, hot-rolled steel will prove equally satisfactory.

B&W Bulletin TB-333 contains valuable tips on how to make better products for less money, and is yours for the asking. Friendly Mr. Tubes —your nearby B&W Tube Representative—will be happy to discuss your specific tubing requirements at your convenience.

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa. — Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio — Welded Carbon Steel Tubing

B&W SEAMLESS and WELDED TUBES

TA-1749 (E)

You Save Erection Time with High-Strength Bolts

Construction moves right along when you use Bethlehem High-Strength Bolts to join structural members. For these bolts can be installed quickly, and by a two-man crew.

Bethlehem High-Strength Bolts are used in place of field-driven rivets. They are used with a hardened washer under the head, and another washer under the hexagonal nut. This permits the development of the high torque required, without scoring the connected material. While one man holds the bolt-head with a holding wrench, his partner drives the nut to refusal, using an impact wrench. The entire assembly can be completed in a matter of seconds.

Bethlehem High-Strength Bolts are made of carbon steel in a wide size range. They are heat-treated by quenching and tempering to meet the requirements of ASTM Specification A-325. Additional information about these bolts is available in a booklet we have just published, "High-Strength Bolting for Structural Joints." A copy will gladly be mailed on request.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor* — Bethlehem Steel Export Corporation

BETHLEHEM STEEL

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You get the same outstanding performance from every Rex product no matter where or when you buy it. That's because every heat of Crucible Rex High Speed Steel is given a careful metallurgical laboratory examination to insure that each piece meets Crucible's high standard of uniformity.

And its high cutting efficiency, uniform hardening response, and combination of maximum red hardness and toughness make Rex High Speed Steel the standard choice in important shops throughout the country.

When you need high speed steels specify REX. They are readily available from all Crucible warehouses and leading distributors everywhere.

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Peerless Hot Work Steels
Halcomb 218
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AirKool Die Steel
Airdi® 150
Nu-Die V Die Casting Steel
CSM 2 Mold Steel
La Belle® Silicon #2
Atha Pneu

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WRITE TODAY for the unique Crucible Tool Steel Selector, 9" diameter, in 3 colors — a twist of the dial tells you which tool steel is best for your application. Address your request to Crucible Steel Company of America, Dept. S, Oliver Building, Pittsburgh 22, Pa.

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53 years of Fine steelmaking

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HOBART NO.12 E-6012

An all-position mild steel rod for AC or DC

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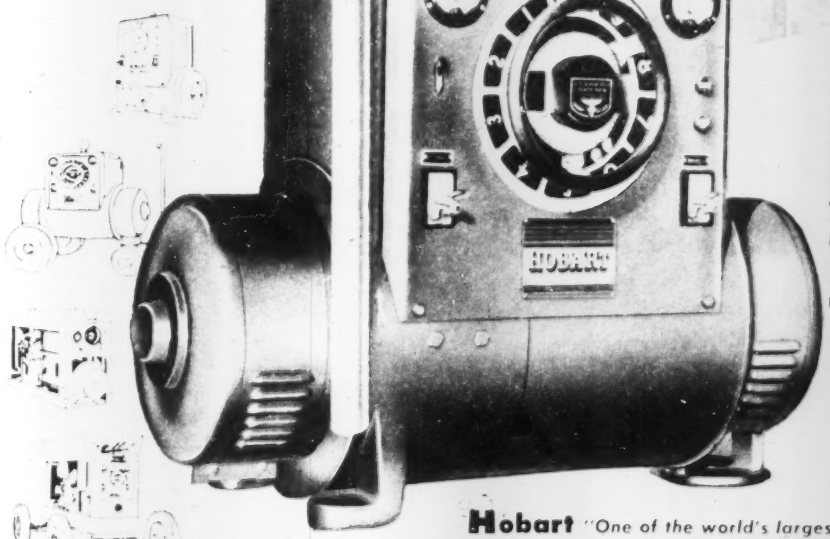
Just as many leading metal fabricators have found, you'll quickly see the difference and the reasons why, Hobart No. 12 is the most versatile electrode, once you've tried them. Write for samples, take them out to your welding operators and let them make the test under your own actual working conditions. That is the only way to be convinced of Hobart's superiority for more actual weld deposite, less stub loss and spatter — even when higher than normal welding currents are used.

Whatever your welding problem, you'll find the Hobart "12" will give you a faster, better, more efficient job. Try them now — see the difference and what they will really do.



Faster welding at lower cost is yours with rugged, heavy duty HOBART welders. Only HOBART welders with advanced engineering give you the lower cost and constant performance so essential to profitable production welding.

Try, compare HOBART's long life, trouble-free service, extra capacity, and simplicity of operation with any other welder. Prove to yourself that HOBART is by far your best buy and why HOBART has earned the top position in every branch of welding! You'll marvel at its convenience features and simplicity of operation.

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Without obligation, send information on items checked below.

☐ Electric Drive Welder ☐ Gas Drive Welder ☐ Pipeliner Welder ☐ Bantam Champ Welder. Send me ☐ Welder Catalog ☐ Electrode Catalog ☐ Accessory Catalog.

NAME _____ POSITION _____

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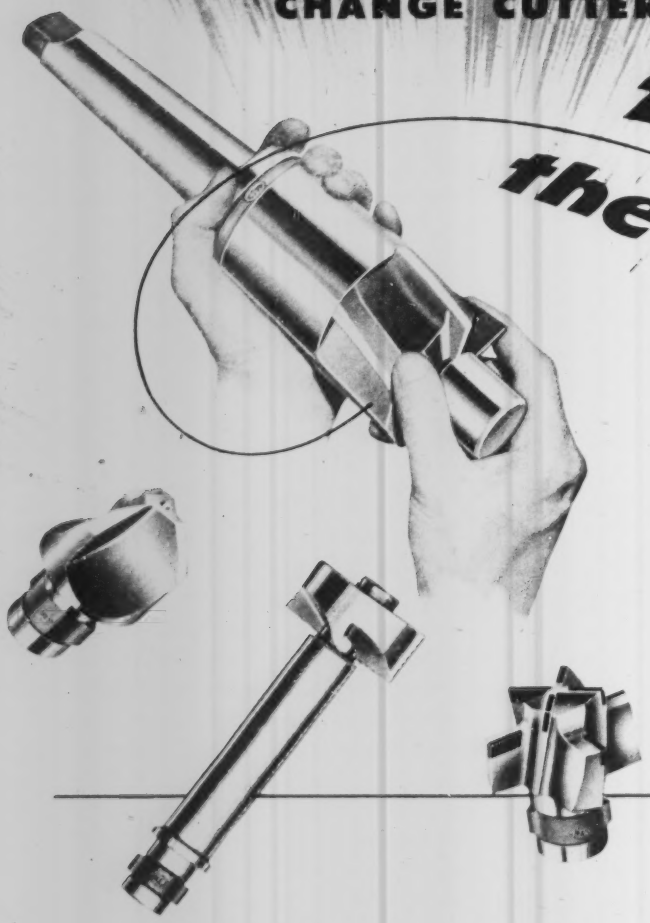
CHANGE CUTTERS WITH A

TWIST of the WRIST



With Continental Standard Drive Holders you can change cutters with a *twist of the wrist* no matter how severe the operation has been. This will save you time and save your tools.

It is as simple as this: The Continental Standard Drive consists of integral double driving lugs on the shank of the cutter which engage double abutments in the socket of the holder. Double aligning bearings keep the cutter and holder in rigid alignment. The drive is machined from the solid—there are no pins or loose details. Result—a balanced, positive drive which is non-wedging and practically indestructible.

Available in standard counterbores, spot facers, countersinks—and on special tools such as multiple-diameter cutters, step counterbores, radius and chamfering applications. It is equally applicable for inverted operations.

Order through your Ex-Cell-O representative or direct from Continental Tool Works in Detroit.

CONTINENTAL TOOL WORKS
CTW
EX-CELL-O CORPORATION

TOOL UP WITH CONTINENTAL DRIVE

Continental Counterbores may be purchased individually or in sets. Write on your company letterhead for Catalog 60681.

Continental

52-25

This Week in Metalworking

STEEL

Vol. 133 No. 16 October 19, 1953

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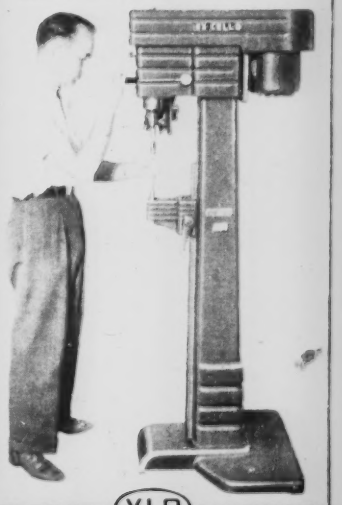
PROBLEM:
To get accurate positioning from female centers.

ANSWER:
LAP THE CENTERS

Ex-Cell-O Center Lapping Machines correct inaccuracies of rough centers, assuring GREATER PRECISION from your present equipment. They are easy to operate. Center Lapping reduces manufacturing costs by minimizing waste from grinding rejection; shortens assembly time because of closer tolerances. All the facts are in Bulletin No. 40271. Write for a copy.



53-28 XLD

CENTER LAPPING MACHINES
BY
EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

(Advertisement)

what's NEW in Engineering

A synthetic soil conditioner has been announced which helps to control rain and wind erosion on construction sites, levees, rights of way and similar "bare ground" sites. Designed to stabilize aggregates on the soil surface, it helps to hold seeds and soil in place until vegetation cover takes over the job.

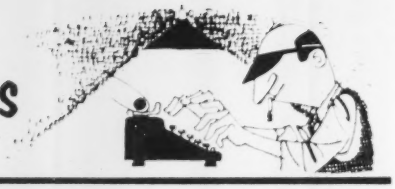
Deep-sea divers joined a small army of engineers and construction crews in driving over 12,000 piles at a riverside site for a Louisiana plant to provide a stable foundation in mushy ground. Divers, working 40 feet down in the Mississippi River, were required to direct

placement of the concrete seal. We'll send you a 32 page illustrated book which tells how Kaiser Engineers is equipped to meet challenging problems like this one at the nation's largest aluminum plant, which was producing metal in just 10 months.

A pocket pyrometer, now on the market, gives direct reading of temperatures up to 3,300 deg. F. Only six and one-half inches long, it weighs about five ounces, and is shaped like a miniature telescope.

Whether it's designing an oil refinery, building a porcelain enameling plant or laying out a site plan, Kaiser Engineers undertakes the job with assurance because of the variety of talent within the organization. Successful experience in a wide field of design, engineering and construction tells the story. Call or write Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

behind the scenes



What's A Baby Worth?

We've just returned from lunch and our noggin is still spinning from the amazing diet of statistics we had served up to us along with our chicken pot pie. Of course, startling statistics are to be expected when your eating partner is Newman Ladabouche, STEEL's king-sized market research manager.

According to Lad, during that one quick hour we spent in the local bistro, a net total of 300 persons were added to the United States domestic population. And, he tells us, it's been going just that way each hour since the first of the year.

At this rate, it appears that 1960 will see our U. S. grow to 160 million people with the possibility of reaching 200 million by 1975 and 300 million by the year 2000.

"What does this mean to metalworking?" we asked.

Lad's answer was quick and to the point. "The way I figure it, each new baby born in 1953, after adjustments for the inflated dollar, will consume from $17,710 to $118,430 worth of metalworking products either directly or indirectly during his 65-year life span."

"To put it another way," he continued, "it could mean that regardless of a dip in defense spending, 1960 would record metalworking sales somewhere in the neighborhood of $160 billion with the possibility that 1975 would reach $280 billion and the year 2000 a fabulous $700 billion."

This sounds like a mighty nice neighborhood. Better move in!

If all Ladabouche's observations impress you as so much gobbledegook, we invite you to take a quick look at the sales of metalworking plants during the thirteen-year period 1940-1953. The 1940 total came to a fancy $23.2 billion. This figure multiplied itself approximately six times to reach a lofty $121 billion in 1953.

Mon Dieux! That's higher than we can count.

Tomorrow's Important, Too!

A recent study of the city of Erie, Pa., revealed that, in just three years, 56% of the companies had placed new men in one or more top positions. You can well imagine the high percentage of turnover by 1960.

It appears to us that the men who will head up the metalworking industry seven to ten years from today are, almost without exception working their collective ways forward from down in the ranks right now.

Could be these youngsters are a lot more important than many metalworking managements give them credit for being. Why? Because these are the men who will be charged with the responsibility of operating a metalworking industry perhaps half again as large as it is today. Interesting thought, isn't it?

Workhorse Vs. Racehorse

We were intrigued by a recent report carried in the Oct. 5 issue of STEEL in which Peter Muller-Monk, vice president, Society of Industrial Designers, detailed his impressions of the European machine tools he saw displayed at the Exposition of the Machine Tool Industry in Brussels early in September.

"European machine tools set a very high standard of appearance with fine finish, simple construction and logical, functional arrangement of controls."

He went on to describe U. S. machine tools as the "hon product" for general production work and feels its great flexibility makes it the best there is; but for specific applications the European models are excellent.

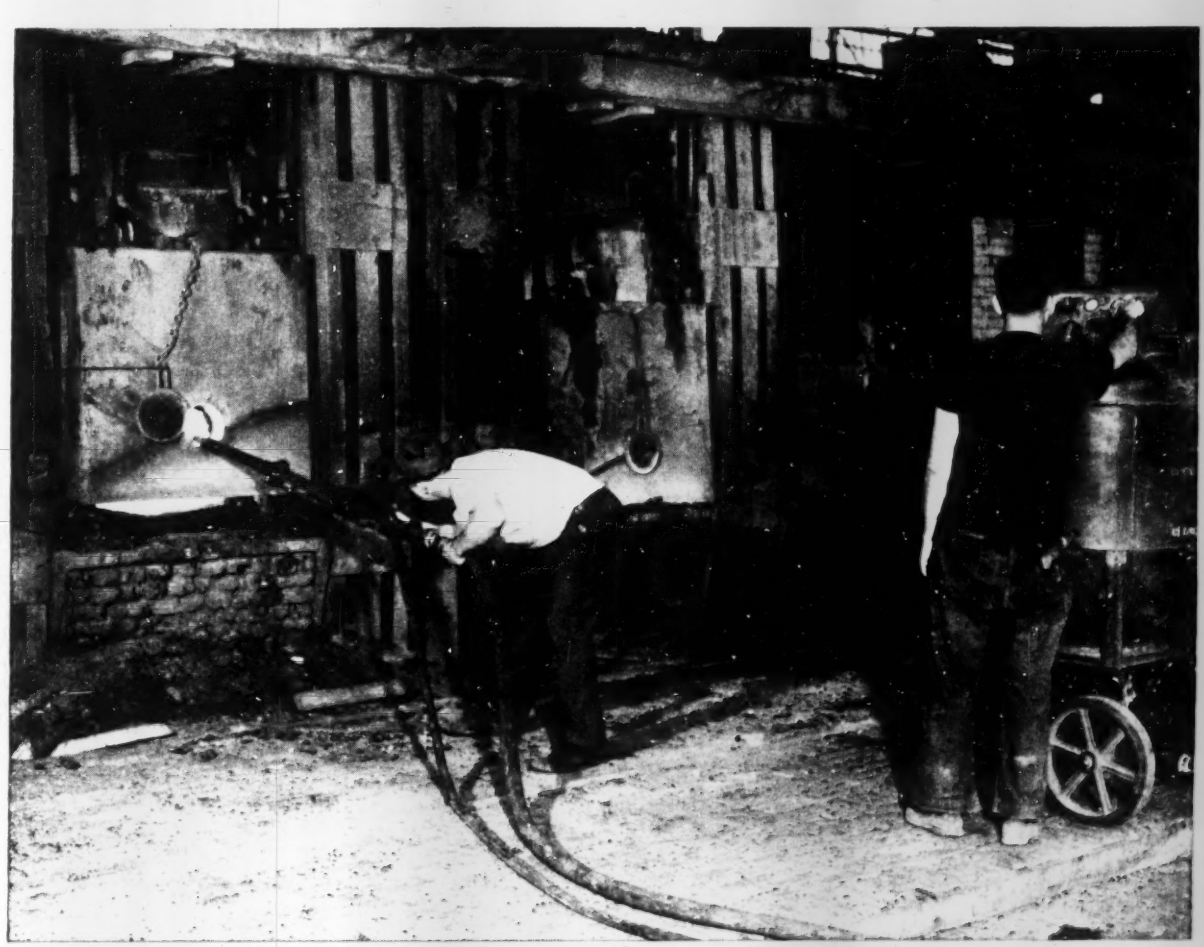
"Americans build a workhorse," says Mr. Muller-Monk, "Europeans a racehorse."

Color Metallography

Say, before you set down this issue be certain to see the article *Color Shows Up the Unknown with Metallography* on page 93 of this issue. There are some beautiful four-color reproductions in it that will make your metallurgical mouths water.

Shrdlu

(Metalworking Outlook Page 37)



Open hearth back wall is repaired with BRI Gun and Roebling furnace stays on line 3 extra weeks

HERE is another instance in which a BRI Gun paid for itself on a single emergency job.

Shortly after John A. Roebling's Sons Corporation placed their BRI Gun in service, a section of the back wall near the skew in one of their open hearth furnaces began to erode. This section was repaired with Gundol and Gunchrome M and the furnace kept on the line for three weeks, until the furnace went down for a scheduled rebuild.

Now, fourteen months later, practically all Roebling furnace personnel are experienced in the operation of the BRI Gun and use the equipment regularly. Consequently, furnace life has been increased and the problem of skewback maintenance virtually eliminated.

Roebling's experience confirms that of the several hundred BRI Gun owners who have found the equipment easy to operate, cheap to maintain and highly effective for making emergency as well as routine repairs.

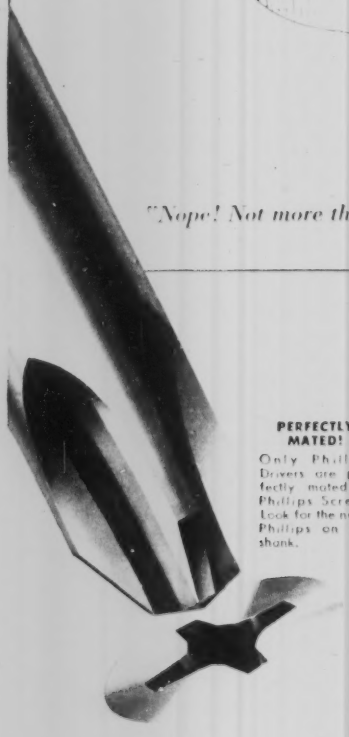
If you are not yet sold on the gun and on Gunchrome, Gundol and Gunmix, why not ask your Basic representative for the whole story?

Basic Refractories Incorporated 845 HANNA BUILDING, CLEVELAND 15, OHIO

Exclusive Agents in Canada: REFRACTORIES ENGINEERING AND SUPPLIES, LTD., Hamilton and Montreal

What's Screwy? by Phillips

"Nope! Not more than 3 Phillips Recessed Head Screws for the lot. After all, it's only ivory."



PERFECTLY MATED!
Only Phillips Drivers are perfectly mated to Phillips Screws. Look for the name Phillips on the shank.

SALES VALUE is only one of many advantages added to your product when you use Phillips Screws. These screws also save money, work, time. They eliminate driver skids, damaged parts and split screw heads. They cut driving time up to 50%. And they set up tighter having a maximum strength of head due to their design. For best results, choose Phillips Wood, Machine, Tapping Screws or "Sems."

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X marks the spot... the mark of extra quality

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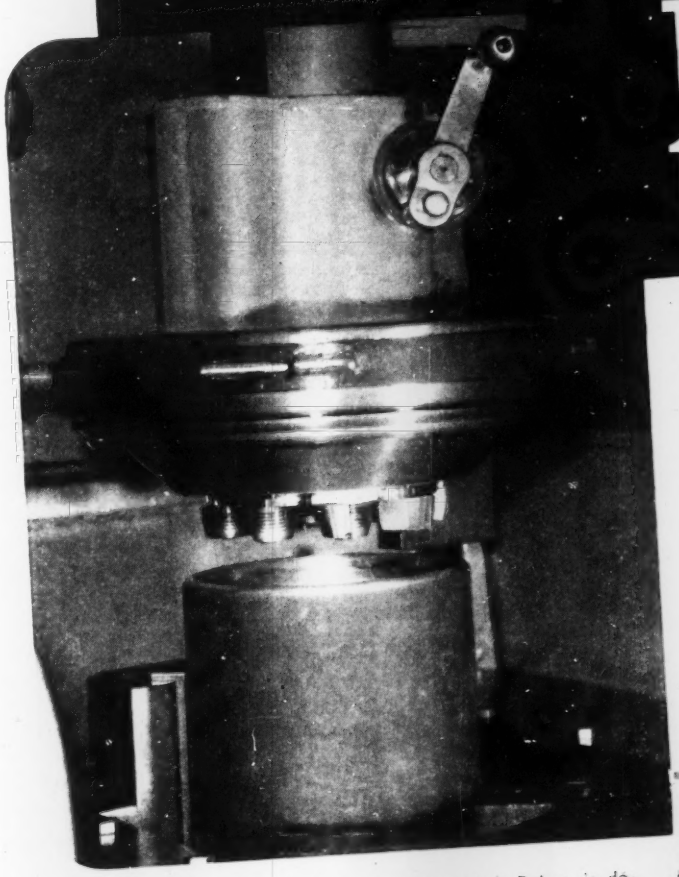
SHAKEPROOF DIV. OF ILLINOIS TOOL WORKS • THE SOUTHINGTON HDWE. MFG. COMPANY
STERLING BOLT COMPANY • WALES BEECH CORP.

TODAY'S...AND THE FUTURE'S...FINEST FASTENER

LARGE CASING THREADS TAPPED IN 12 MINUTES

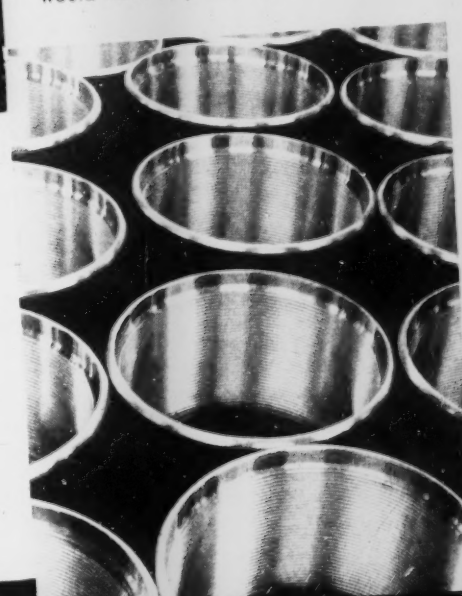


BAKER OIL TOOLS, INC., of Los Angeles, California, reports that a **LANDIS** CBLM Circular Chaser Tap mounted on a Stamet's vertical tapping machine has reduced threading time 75% tapping $6\frac{5}{8}$" to $13\frac{3}{8}$" diameter threads in casing shoes.

Production examples illustrate the large savings made in threading time: (1) tapping $13\frac{3}{8}$" N-80 tubular stock, oil well casing shoe with 8 Pitch API round threads 5" long requires but 12 minutes; (2) tapping a $6\frac{5}{8}$" piece with an 8 pitch API round thread 5" long takes only 8 minutes. Formerly threading a typical casing shoe would have required all of 40 minutes.

The **LANDIS** CBLM Tap, as used at Baker, is designed for use on production tapping machines to thread line pipe, casing, and drill pipe couplings. The tap head is detachable, and with the use of the various size tap heads available, the CBLM Tap will tap threads ranging from $4\frac{1}{2}$" to $13\frac{3}{8}$" O.D. It will cut either 3/16", $\frac{1}{8}$", or $\frac{3}{4}$" tapered threads well within all API Standards, and can also be arranged for straight threading. Infinite taper adjustments are possible either above or below the required degree of taper to assure precision accuracy.

LANDIS manufactures a wide variety of taps for the economical production of internal threads ranging from $1\frac{1}{4}$" to $13\frac{3}{8}$", either straight or tapered threads, on both stationary and rotating spindle machines. To ensure complete information, please enclose specifications when writing.



LANDIS Machine CO. WAYNESBORO, PENNSYLVANIA, U. S. A.

375-2

IN YOUR STEEL FABRICATION
FASTEN IT BETTER...AT LESS COST, WITH NELWELD

Split second stud welding lowers fabrication costs, improves product.
Fast installation of handling accessories that can be easily removed.
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ARC WELDS STUDS TO STEEL IN A SPLIT-SECOND

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. . . right in your own plant how your production and your products can be improved with this modern fastening method. Your design and production men can actually participate and test the results on your own products.

For full information on Nelweld as applied to steel fabrication, write the Main Office, Lorain, Ohio.

Fasten it Better...at Less Cost, with NELWELD T M REG

NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

LETTERS TO THE EDITORS

Inside Story of Motor Ratings

A feature article of your Sept. 21 issue, "Up-Rated Motors: Bigger Inside, Smaller Outside" (p. 128), covered the revised National Electrical Manufacturers Association standards for integral horsepower electric motors.

In reading the article I couldn't help feel that it would be extremely valuable and profitable for all our sales personnel in the Hoover Co.'s electric motor division. Accordingly, I wonder if it would be possible to obtain 25 to 50 reprints of the article.

A. E. Ott
merchandising manager
Hoover Co.
Electric Motor Division
North Plainfield, N. J.

Best by Reader Test

It is the desire of our company to subscribe to your interesting weekly publication, STEEL.

Our organization has charge of sales on forgings, stampings, screw machine products and machining for many large companies.

As our daily work brings us into contact with all types of products made with steel, we feel it is necessary that we regularly read the best publication covering this on the market.

Gerald N. Abt
Hana Co.
Buffalo

Guide for Carbon Steel Bars

The article "Guide for Selection of Carbon Steel Bars" by G. P. Witteman (Sept. 14, p. 104) was very interesting. I would like to know if I could obtain tear sheets of this article and also of the next two installments.

E. Hugo Wolf
chief engineer
St. Joseph Lead Co.
Bonne Terre, Mo.

• *A limited number of reprints of the three installments will be available shortly. A complete set will be sent at that time.—ED.*

The Power To Persuade

"Grim Warning" (Aug. 17, p. 63) is a great editorial! You have insight and the abilities to put into moving words your messages.

Edward A. Rumely
executive secretary
Committee for Constitutional
Government, Inc.
New York

Metal Powder Grows Up

In your "Technical Outlook" of the July 20 issue (p. 83), it was mentioned that some of the automobile companies

Please turn to page 12

A Fast Start!

Pictured above are some of the Allis-Chalmers control installations at Granite City Steel.

Left— *Regulex* amplifier exciter sets provide sensitive control for variable voltage dc drives.

Center — Constant voltage control panels for dc auxiliary drives.

Right— Liquid rheostat provides stepless speed control for 7000-hp m-g set.

Regulex is an Allis-Chalmers trademark.

NEW GRANITE CITY "BLOOMER" GOES INTO PRODUCTION WITHOUT SHAKEDOWN

All control for main and dc auxiliary drives in the new blooming mill at Granite City Steel was supplied by Allis-Chalmers. Significantly, near capacity production started immediately . . . without a costly shakedown. In fact, eight days later the old mill was taken out since it was apparent that standby equipment was not needed.

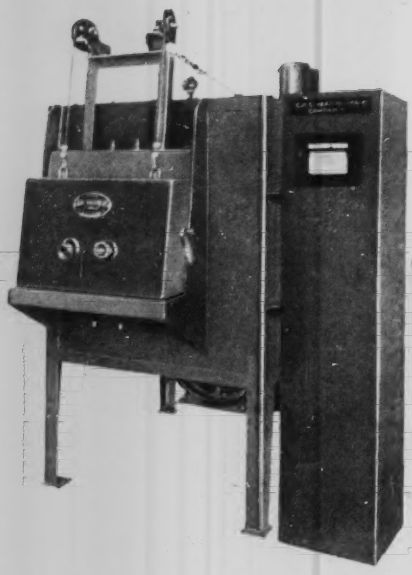
Noteworthy, too, is the fact that the installation was completed *on time*. Controls were factory-assembled, thus simplifying and speeding installation.

Progressive Granite City Steel has standardized on Allis-Chalmers electrical equipment in its large expansion program. The recently completed blooming mill is the first stage in a three-stage plan. When completed, this realistic, farsighted expansion will push production to well over a million ingot tons annually.

Why not put Allis-Chalmers skill and experience to work for you? Call your nearby A-C steel mill representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A 4114

ALLIS-CHALMERS



SEE THE NEW GASMACO HI-TEMP TOOL ROOM FURNACE

AT BOOTH 2757

NATIONAL METAL EXPOSITION

OCTOBER 19-23 CLEVELAND, OHIO

To satisfy new needs — heat treatment of the new materials, cemented carbides, high speed tool steels, etc. . . this new furnace was specially designed for heat treatment in tool rooms, die shops and for general use in research laboratories.

New Gasmaco Furnace features:

- Temperatures to 2500° F.
- Operates with controlled atmospheres
- Refractory tube heated . . . CARBOFRAX by Carborundum
- Gas Fired . . . Economical
- Cylinder operated door mechanism
- Rapid, uniform heating
- Accurate control
- Flue gas eductors
- Silicon carbide hearth

Other industrial furnaces manufactured for forging and heat treating processes. Direct, Radiant Tube, or Convection Heated . . . Rotary or Straight Thru Designs . . . High Temperature Roller Hearth . . . Cooling Tables and Conveyors, Charging Equipment and Manipulators.

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Designers • Fabricators • Erectors
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HAMILTON, ONTARIO

LETTERS

Concluded from page 10

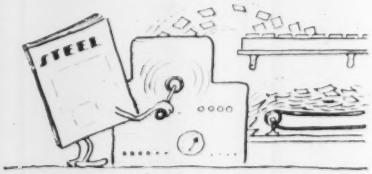
were using a new metal powder in some cases to replace forgings.

Would you please give us the sources involved so that we can secure other information.

R. E. Andrews
purchasing engineer
Caterpillar Tractor Co.
Peoria, Ill.

• *For further information on the metal powder mentioned, write A. J. Langhammer, president, Amplex Oilite Products Division, Chrysler Corp., Detroit.—ED.*

How To Save Manpower



In your editorial "Conserving Manpower" (July 20, p.39) you refer to a company which is using tabulating equipment for the processing of inquiries. This intrigues us inasmuch as we have our complete accounting system on tabulating equipment and are wondering if we are "missing a boat."

Would it be possible for you to advise us the name of this company? We would like very much to be able to contact them to see if there is something they are doing that would be of assistance in the handling of our inquiries.

H. W. Austin
auditor
Edgecomb Steel Co.
Philadelphia

• *The company referred to was the Penton Publishing Co. In recent years the number of inquiries received from our subscribers asking for additional information about equipment described in our publications has mounted to where it is difficult to handle these inquiries manually. Also, it has been increasingly difficult to find girls who are interested in this type of work. We went to Remington-Rand and they worked out some adaptations of their machines to our particular needs. We will be happy to give you such information as desired about this installation.—ED.*

Electrics Challenge Open Hearth

We have found your article "Progress in Steelmaking: Open Hearth Challenged as More Carbon Steel Goes Electric" (Aug. 24, p. 84) of extreme interest.

If there are any tear sheets of this article, we would appreciate receiving at least two copies. Or two copies of the complete issue would serve our needs.

Edward Ott
industrial power engineer
Metropolitan Edison Co.
Reading, Pa.

• *Two sets of tear sheets have been sent.—ED.*

Key Fits Many Doors

In your Aug. 24 issue we found exceptional interest in the article "Your Key to Good Plant Discipline: The Foreman" (p. 49) by A. C. Croft. If available, we would like to order 150 reprints of this article for distribution to our staff.

E. D. Harrison
administrative assistant
Sonotone Corp.
Elmsford, N. Y.

U. S. DRILL HEAD COMPANY SAYS . . .

HEAT TREATING ELIMINATED

- REJECTIONS REDUCED
- WEARABILITY INCREASED AND

COSTS CUT 50%

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SEVERELY COLD-WORKED, FURNACE-TREATED STEEL BARS

Multiple spindle, made by U.S. Drill Head Company, Cincinnati, Ohio, uses spindles made from STRESSPROOF.

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STRESSPROOF's value to manufacturers like U.S. Drill Head stems from its unique combination of four qualities in the bar: (1) Strength, (2) Wearability, (3) Machinability, and (4) Minimum Warpage. Yet STRESSPROOF costs less than other quality cold-finished steel bars. It comes in cold-drawn or ground and polished finish.

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Hammond, Indiana

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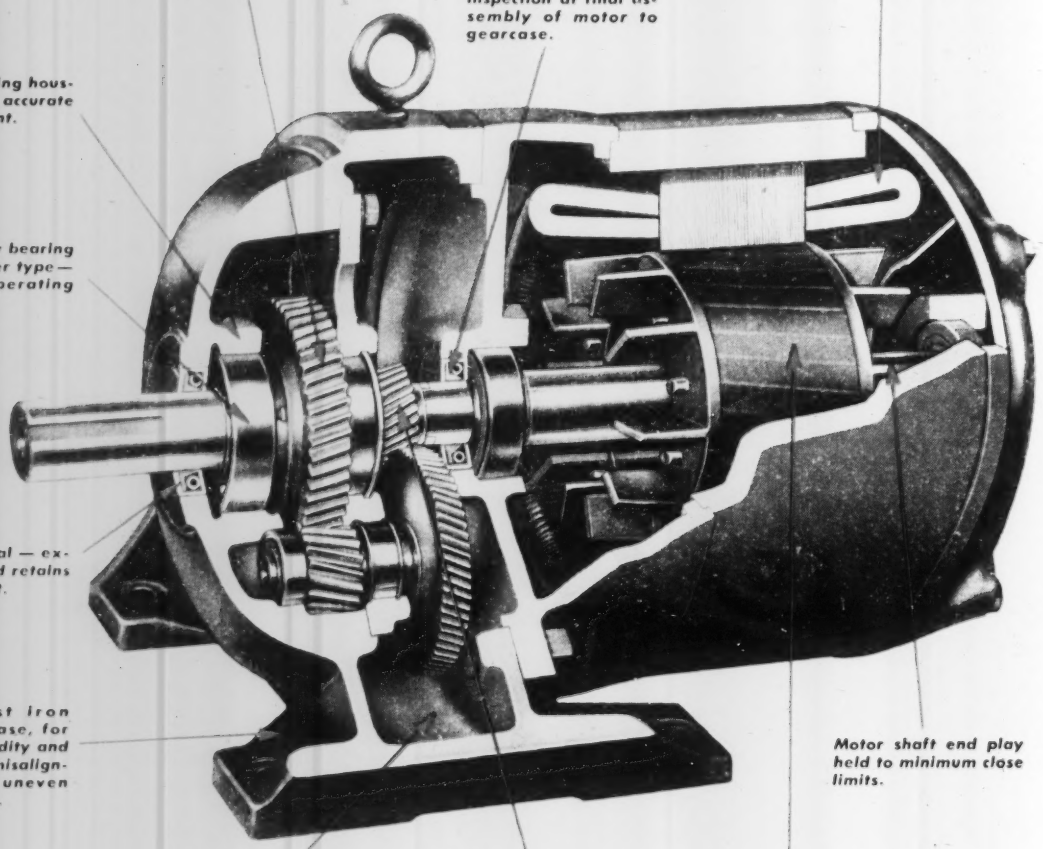
Precision processed, file-hard gears for long wear and resistance to peak overloads.

Selected positive oil seal between gears and high-speed bearing. Lengthens bearing life by sealing off abrasive matter. No blind assembly—visual inspection at final assembly of motor to gearcase.

Properly insulated and carefully impregnated windings for maximum protection and long life.

Integral bearing housings maintain accurate gear alignment.

Extra capacity bearing —ball or roller type— for severe operating conditions.



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Large oil reservoir — efficient splash lubrication.

Locked motor shaft pinion provides positive contact for minimum vibration on reversing service.

Precision-balanced die-cast rotor.

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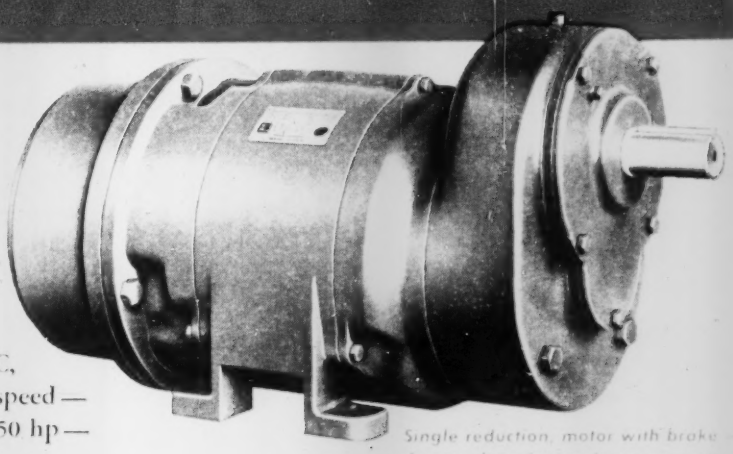

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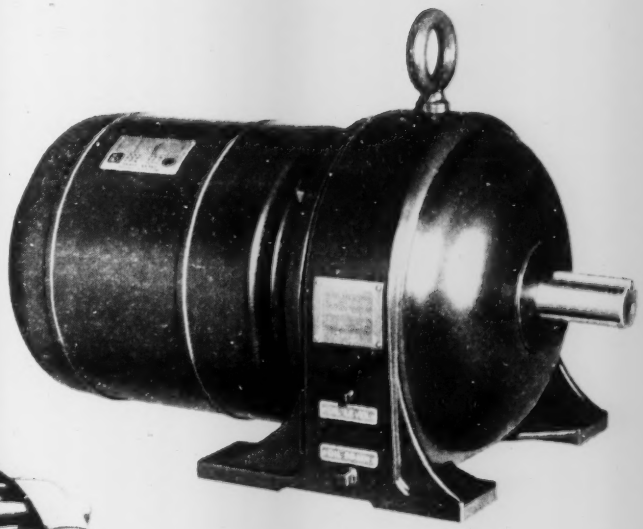
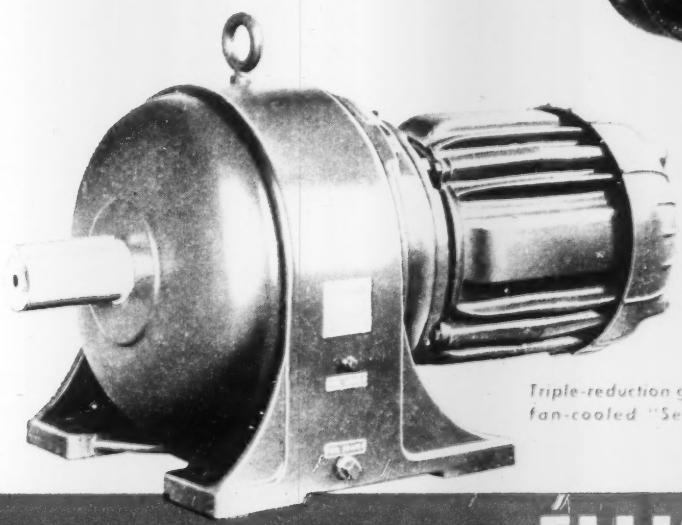
—ask your local Elliott District Office or write direct to Elliott Company, Crocker-Wheeler Division, Ampere, N. J.



C-W Form BA squirrel-cage motor with double-reduction gear—



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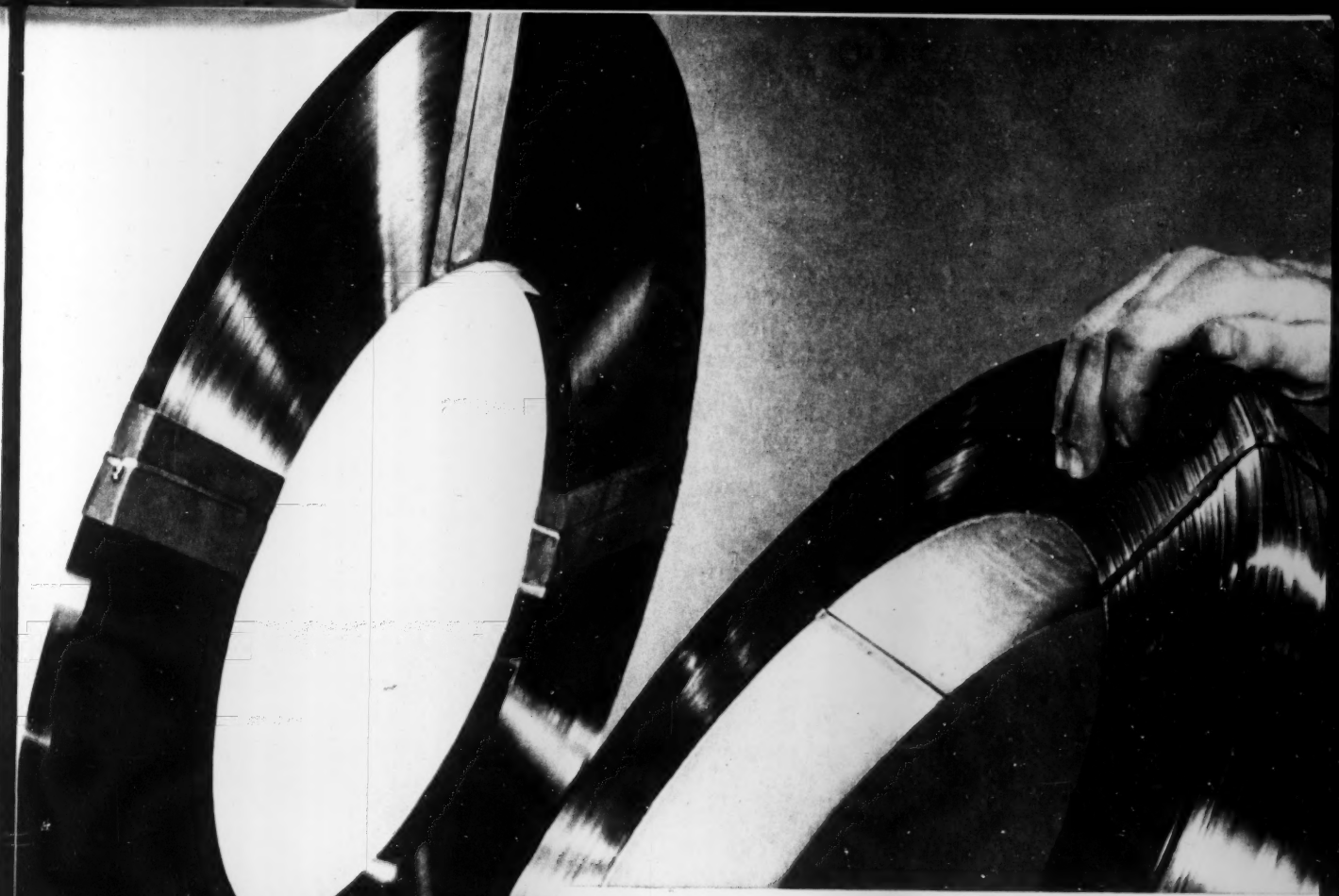

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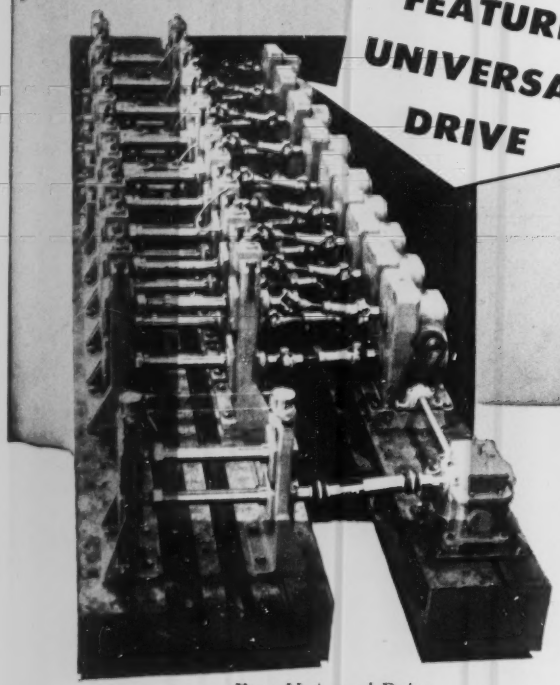
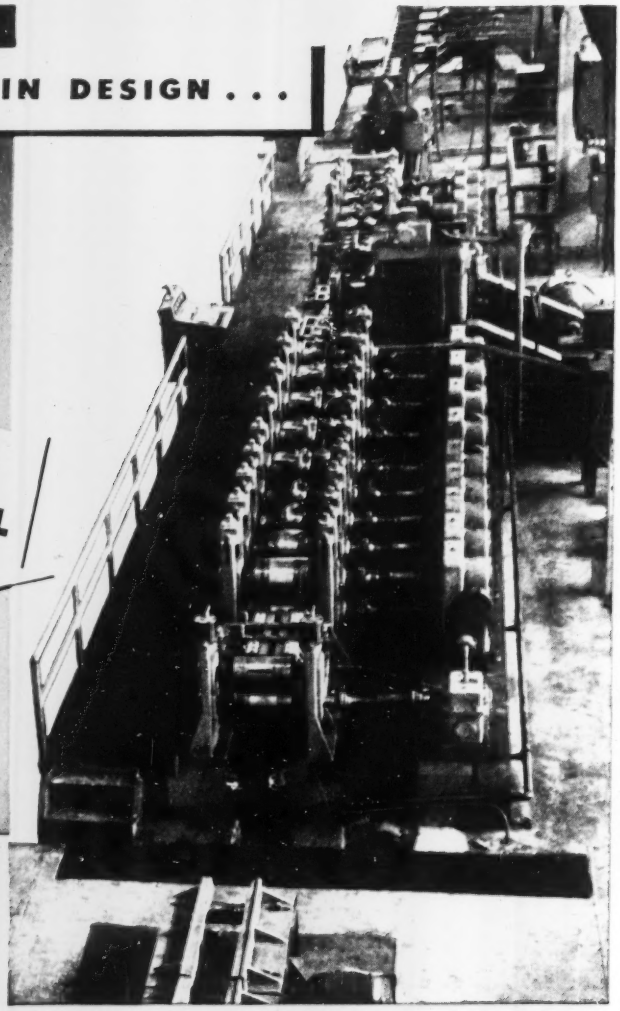


Etna Universal Drive



You'll notice a trend toward Etna's modern machine design. Etna has sold more Universal Drive Mills than all other manufacturers combined. The Universal Drive provides greater accuracy in the forming of the tube, and allows an easier change from the manufacture of one diameter tube to another.

PERMANENT OIL COOLED TRANSFORMER

For greater efficiency an *Oil Cooled Transformer* is incorporated into the machine. It is a *permanent unit* and *never has to be replaced.* Cooling with oil eliminates the necessity to dry out the transformer after each days work, which is necessary when water is used as a transformer coolant. Etna Mills . . . Built for continuous operation. Write for complete details.

Abbey ETNA Company

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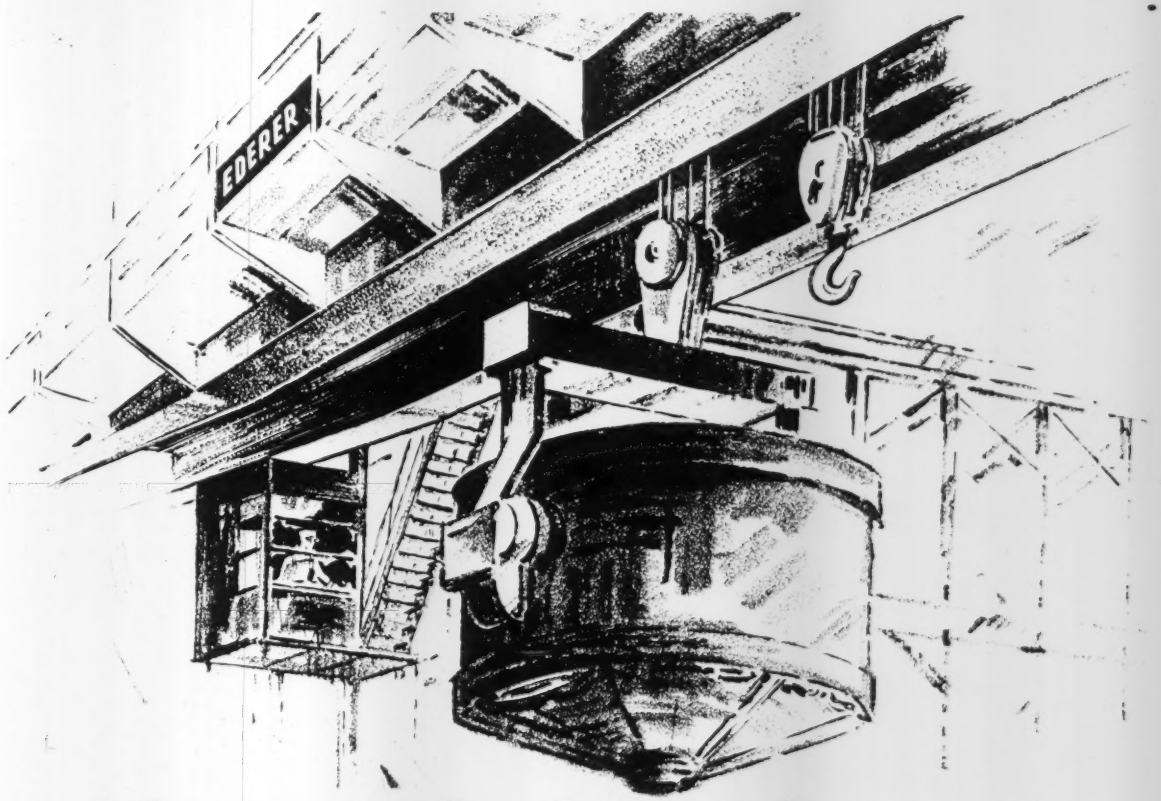

It's got to be Rugged to work in a steel mill

The heaviest duty cranes made are those working in a steel mill—where three grueling shifts a day—365 days a year—with no time down for maintenance—call for truly rugged performance. This 50-ton, 75-foot-span crane, servicing an electric furnace in a large Western steel mill, was "job-engineered" for this extra heavy duty. It is just one of many cranes EDERER has designed and built for the exacting requirements of the steel industry.

EDERER—one of the largest crane manufacturers in the West—can "job-engineer" a crane to *your* specific materials handling requirements—no matter how rugged.

Write for Crane Bulletin CR-500

24/C53

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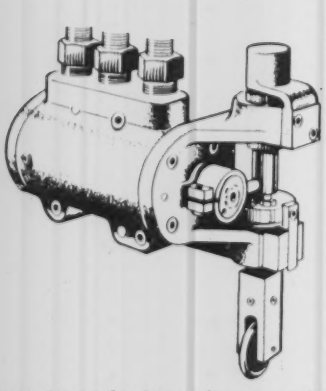

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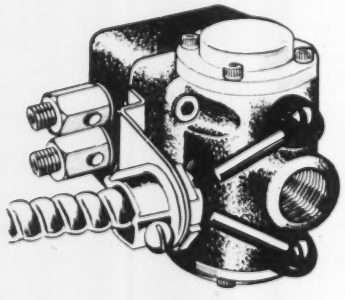

On textile machines, automotive equipment, electrical and electronic devices, and production machinery.

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Before you specify a special socket screw, check UNBRAKO Standards. A standard UNBRAKO will do the same job much cheaper in most cases. You'll get better service and faster deliveries, because UNBRAKO socket screw products are stocked by your industrial distributor. Write for UNBRAKO Standards. SPS, Jenkintown 33, Pa.

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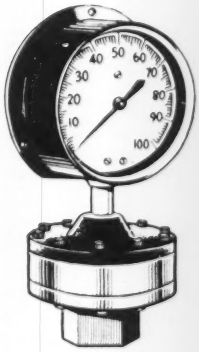

On precision instruments, dies, jigs and fixtures, and many other applications too numerous to mention.

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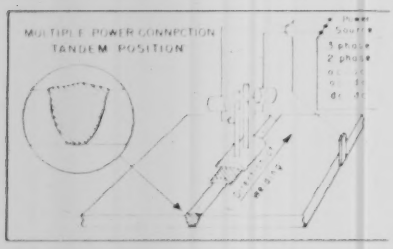
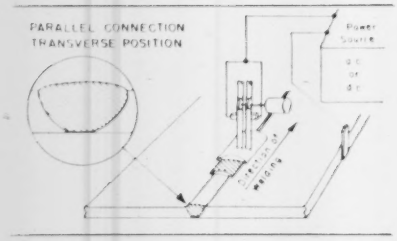
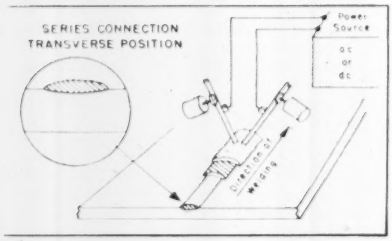
Multiple Electrode Welding

UNIONMELT Multiple Electrode welding with two or more electrodes in tandem, transverse, or other positions increases welding speeds up to three or four times faster than single electrode welding.

By using two or more electrodes in the same weld zone, magnetic reaction can be regulated to provide exceptional control over arc direction and weld shape.







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Dished heads, a common problem in the tank field are being formed in a range of sizes with a simple low cost die and without change in set-up.

Cincinnati Press Brakes are profitable for bending, punching, press work and a great variety of jobbing applications.

Cincinnati Press Brakes, with low-cost tooling, simplify difficult sheet metal and plate jobs and are versatile, profitable and busy tools in any fabricating shop.

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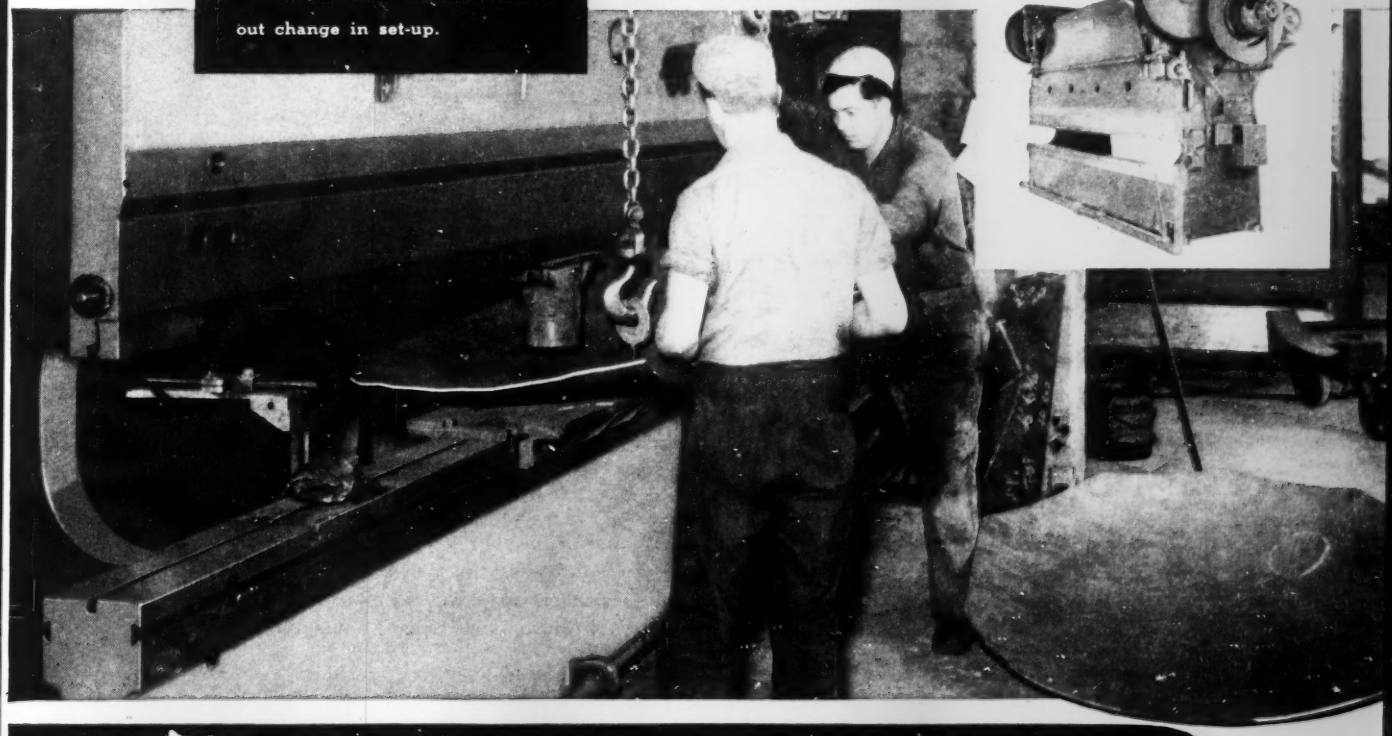
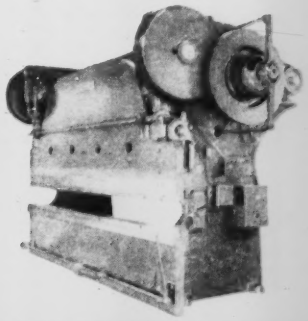
Photos courtesy Bishopric Products Co.





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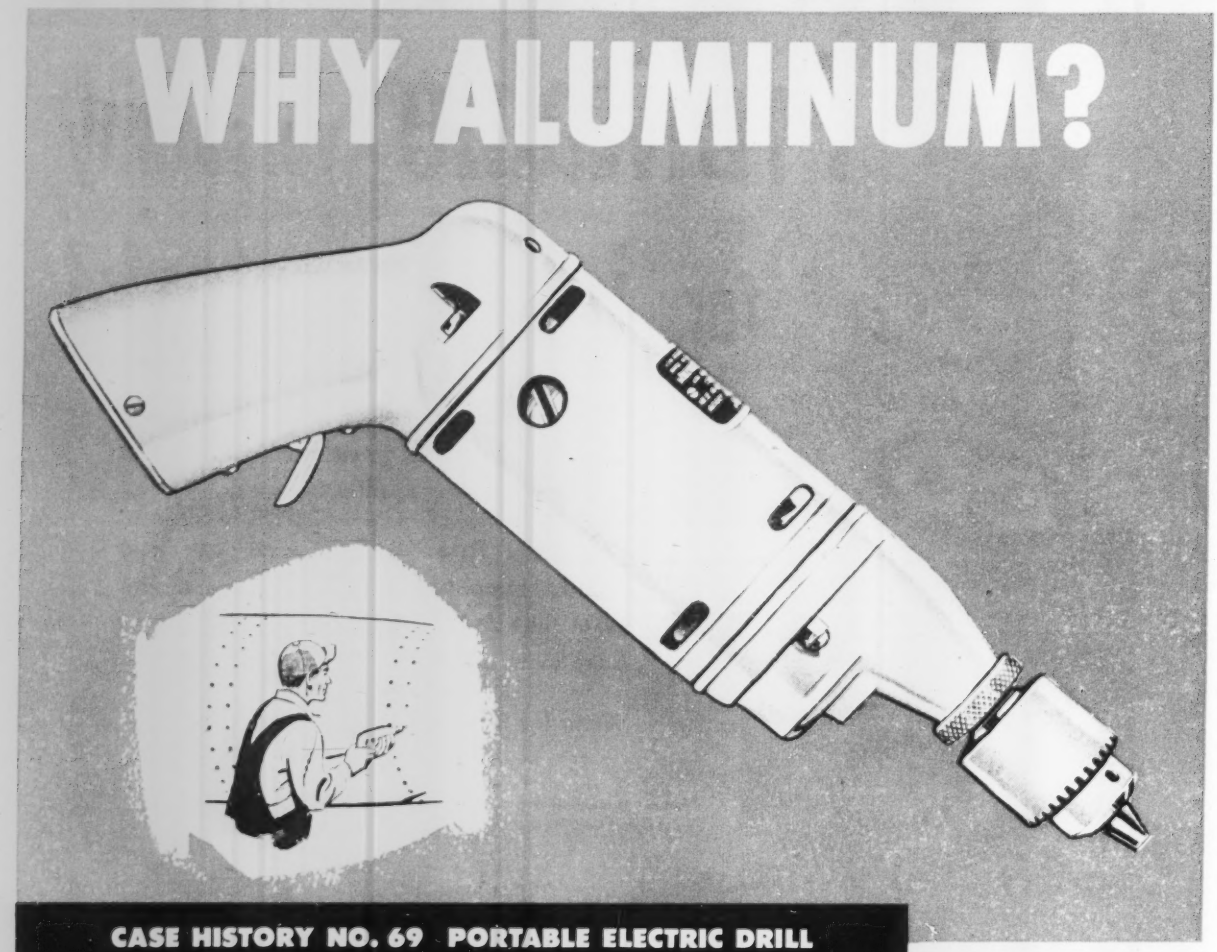

CASE HISTORY NO. 69 PORTABLE ELECTRIC DRILL

A switch to aluminum tubing for the housing of this electric drill permitted the manufacturer to capitalize on two important features of aluminum . . . its light weight and its naturally attractive finish.

The savings in weight is a direct selling point since lightness is of utmost importance in a hand tool of this kind. Furthermore, the manufacturer effected important savings in shipping costs.

Production and assembly costs were also cut since aluminum is easily fabricated and requires only simple buffing for finishing. The manufacturer, Portable Electric Tools, Inc., of Chicago, Illinois, also found that permanently nonrusting aluminum will not corrode should it become nicked or worn.

In almost every industry a change to aluminum has provided manufacturing economies, improved designs and, at the same time, increased sales appeal. Ask Reynolds Aluminum Specialists to help you apply aluminum's advantages to your products and production.

Call the nearby Reynolds office listed under "Aluminum" in your classified telephone directory. Also write for complete index of design and fabrication literature. Write to Reynolds Metals Co., 2520 South Third Street, Louisville 1, Ky.

See "*Mister Peepers*" Sundays on NBC-TV. Consult local listing for time and station.

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Modern Machine Tools..

SLASH PRODUCTION COSTS!

New
BAKER
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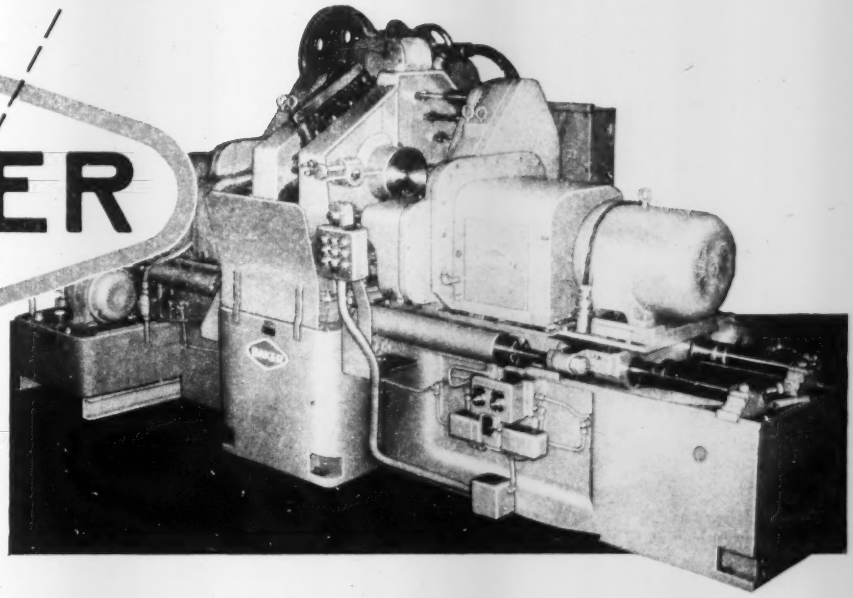

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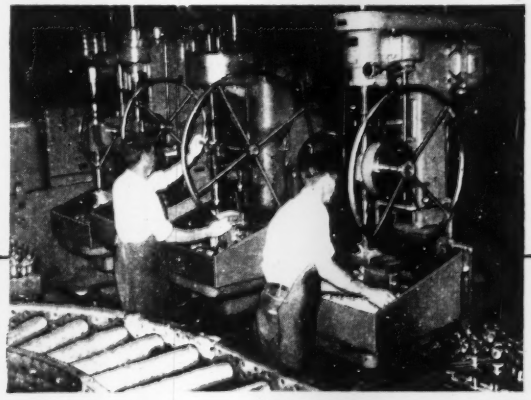
1 Machine . . .

Multi-Operations Fully Automatic On 4 Parts Simultaneously—Load—Drill—Core Drill—Ream—Unload



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2 OPERATORS . . 4 MACHINES . .

Hand Controls + Excessive Handling + Capstan And Hand Engagement Of Feed + Operator Fatigue = Low Production Rate At High Cost.

INCREASE PRODUCTIVITY . .
with a NEW BAKER 'Special'

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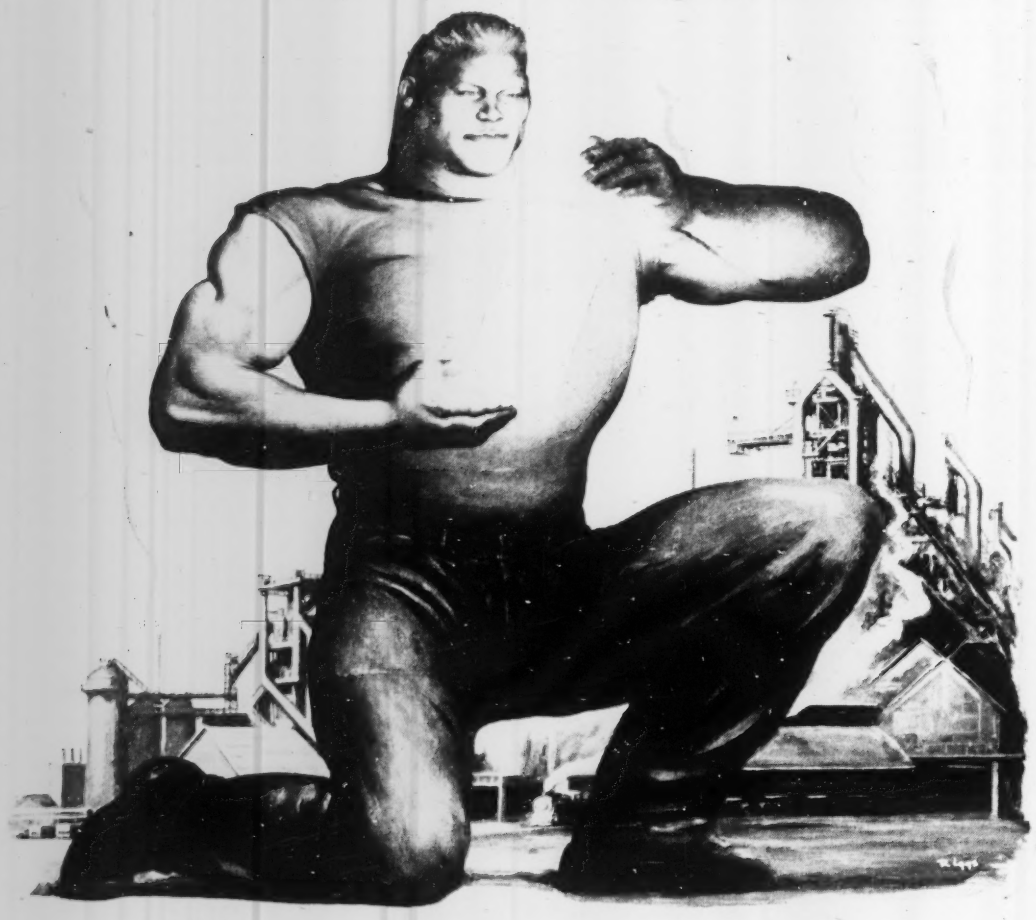
BAKER BROTHERS, INC. Toledo, Ohio
DRILLING...TAPPING...KEYSEATING and CONTOUR GRINDING MACHINES

Gives white hot steel the "kid glove" treatment



GIGANTIC MACHINES with thousands of moving parts are used to shape white hot ingots into plates and sheets. All of these hard-working machine parts are subject to intense heat . . . normal in steel manufacturing. Because of the intense heat, lubrication is a serious problem.

U. S. Steel has tried various types of greases in order to eliminate the problem of oil burn-out. Now they're using a product of Shell Research, Shell Alvania Grease. Result: better lubricating action *at once*. Months after the original installations, rollers were removed and an excellent film of grease was still present.

At the other extreme, zero weather caused grease in an automatic lubricating system to congeal and become unpumpable. Shell Alvania was tried and clogging promptly stopped. This multi-purpose grease is now used extensively in low-temperature operations at U. S. Steel's Ohio Plant.

SHELL ALVANIA GREASE

- **resists oxidation**
- **will not squeeze out**
- **extends periods between overhauls**
- **provides exceptional lubrication in high or low operating temperatures.**

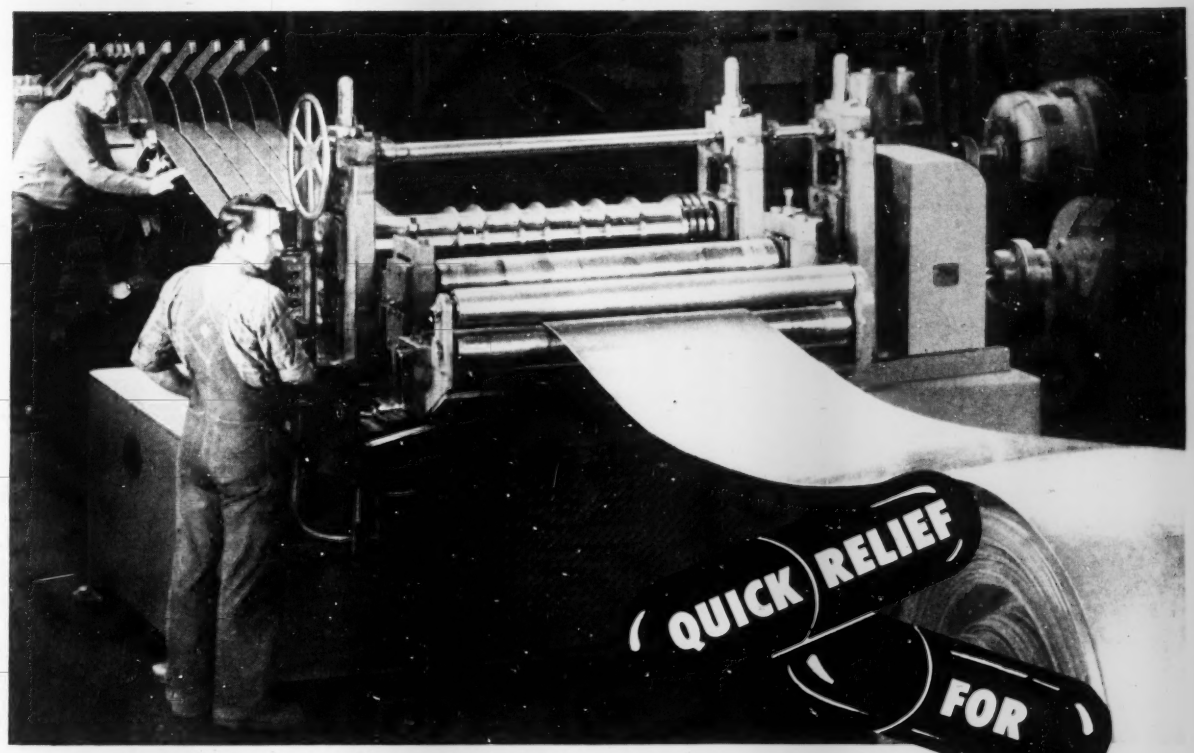
Shell Alvania Grease can cut down costly maintenance and save time and money in *your* plant. Write for technical information.

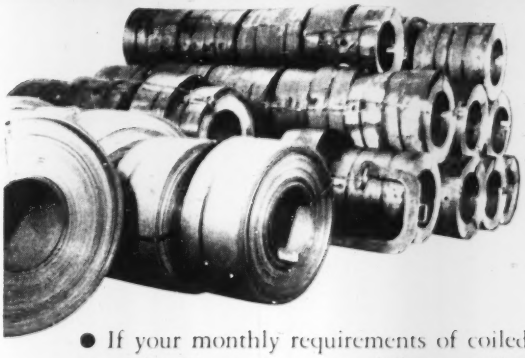
SHELL OIL COMPANY

50 WEST 50TH STREET
NEW YORK 20, NEW YORK

100 BUSH STREET
SAN FRANCISCO 6, CALIFORNIA

SHELL





Slitting Service

HEADACHES

● If your monthly requirements of coiled strip exceed 100 tons, in many different widths and gauges, installing a Yoder slitter may not only result in worthwhile economies but in eliminating costly production bottlenecks.

Coiled strip in standard widths is obviously lower in first cost than slit-to-width strip; the sources of supply are more numerous and deliveries much quicker.

The savings effected by doing your own slitting of moderate tonnages, soon pays for your investment in a Yoder slitter. Equally important, your inventory requirements and production planning are greatly simplified, as you can, from a relatively small stock of standard widths, in a few hours supply your own needs in slit strands.

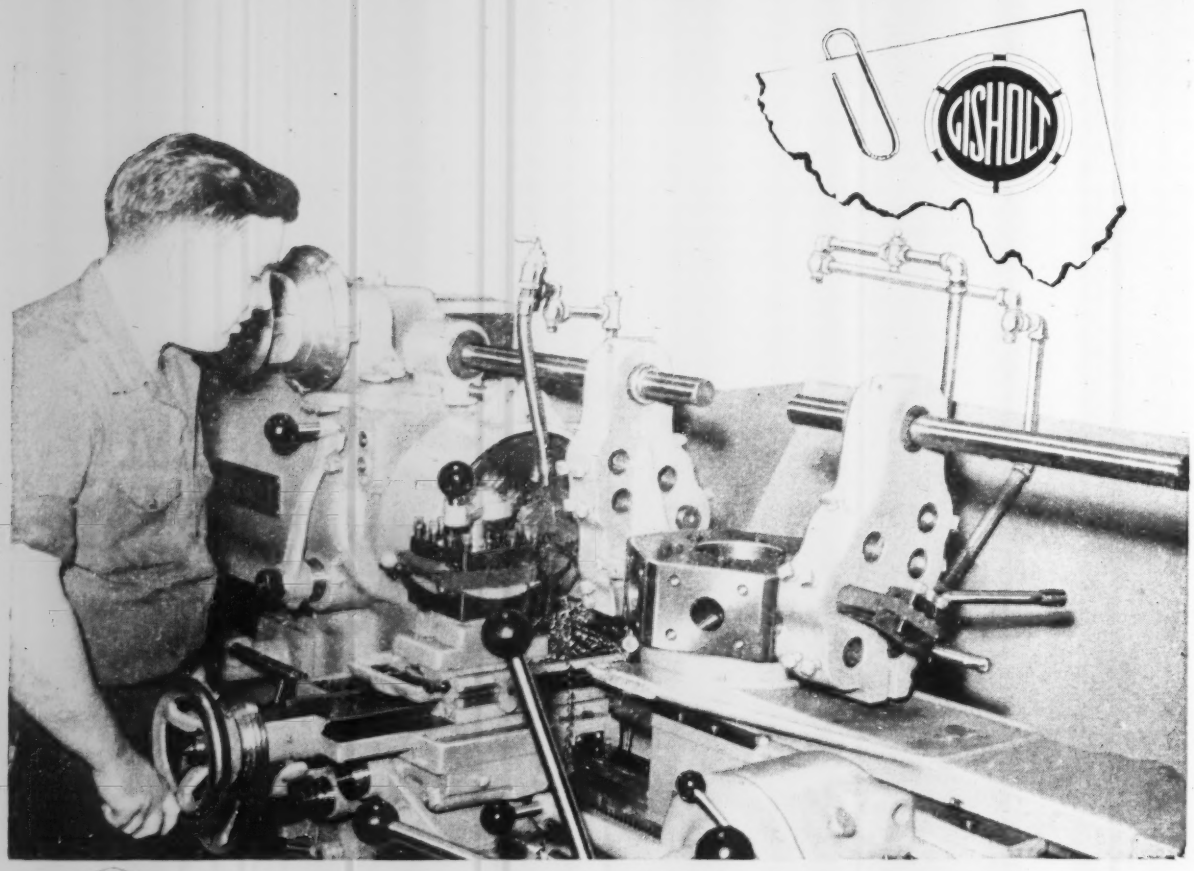
The economies as well as the mechanics of slitter operation are fully discussed and illustrated in the Yoder Slitter Book, free on request.

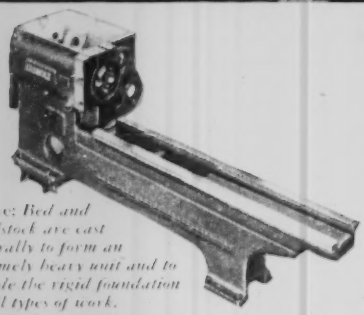
THE YODER COMPANY • **5502 Walworth Avenue, Cleveland, Ohio**

Complete Production Lines

- ★ **COLD-ROLL-FORMING and auxiliary machinery**
- ★ **GANG SLITTING LINES for Coils and Sheets**
- ★ **PIPE and TUBE MILLS–cold forming and welding**

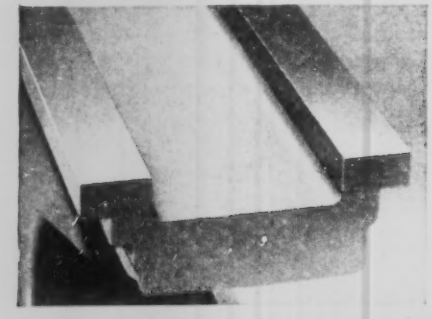
ENGINEERING YODER MANUFACTURING





Above: *Bed and Headstock are cast integrally to form an extremely heavy unit and to provide the rigid foundation for all types of work.*

Below: *Block type ways are straddle keyed to the bed and ground in perfect alignment with the spindle. All working surfaces are hardened to 64-66 Rockwell "C".*



ACCURACY THAT DOESN'T "WEAR OFF"

Here are two good reasons why you can count on the accuracy of Gisholt Turret Lathes—now and years from now.

One-piece bed and headstock, cast as a heavy, rigid unit, reduce distortion and vibration to a minimum. Headstock is jig-bored to insure—and maintain—perfect alignment of spindle and drive shafts, with ample metal to provide the most solid support possible.

Hardened steel ways are augmented by hardened steel strips secured to the ram saddle, as well as hardened steel gibs and clamps, making an assembly that is virtually wear-proof. Its accuracy is further preserved by force lubrication.

These advantages are yours for the long life of any Gisholt Turret Lathe. Ask for complete details.

THE GISHOLT ROUND TABLE *represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.*

GISHOLT

MACHINE COMPANY

Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

STEEL PROBLEMS ?

One call gives you ALL the answers!

Delays are costly. When a business is faced with a problem, it is to its advantage to solve it quickly and maintain production rates. Of course—in this age of mass production, specialists, and far-flung operations—that isn't always possible. But Weirton, with a full appreciation of the importance of its customers' problems, has integrated all operations to provide time-saving answers.

At Weirton, key men who may be needed for decisions on prices, quantities, metallurgy, deliveries, or other problems are within quick reach of one another. Sales, laboratory, production, shipping—all departments are "under one roof" to cut delays to a minimum when customers need quick action.

This method of operation was established for your benefit. When you are faced with a steel problem, pick up your phone and get *all* the answers quickly . . . from Weirton.

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION

The most widely used high temperature block insulation for over a quarter century...

SUPEREX® high temperature block insulation has long been industry's No. 1 choice for service temperatures up to 1900F. It provides *major* economies . . . reduces fuel costs, cuts heat losses, keeps maintenance expense down, costs less to install and has long service life.

These are the reasons why 90% of the nation's hot blast stoves are Superex insulated . . . and why the low cost open hearth steel producers use Superex in their regenerators.

Made of specially selected and calcined diatomaceous silica blended with other insulating materials and bonded with asbestos fiber, Superex will safely withstand temperatures up to 1900F with negligible shrinkage.

Superex has been used with outstanding success in all types of industrial and metallurgical furnaces and ovens, stationary and marine boilers, auxiliary power plant equipment, regenerators, kilns, roasters, high temperature mains, flues and stacks.

Superex has all these important advantages...

Low thermal conductivity—Exceptionally high heat resistance (1900F) combined with excellent insulating value.

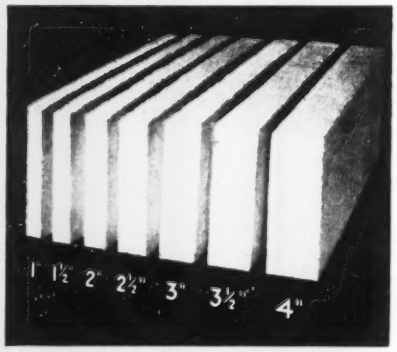
Light weight—Approximately 2 lb per sq ft per in thickness.

Great physical strength—Approximately 6 tons pressure per sq ft are required to compress Superex ½ in.

Long, efficient service life—Superex maintains high insulating value indefinitely—will not disintegrate in the service for which it is recommended.

Fast, easy application—Superex may be cut with an ordinary knife or saw for fitting around openings or to irregular surfaces. Because of its light weight and convenient sizes, Superex assures fast and economical installations.

For complete information about Superex block insulation, write for Brochure IN-134A. Address Johns-Manville, Box 60, New York 16, N. Y. In Canada, write 199 Bay Street, Toronto 1, Ontario.



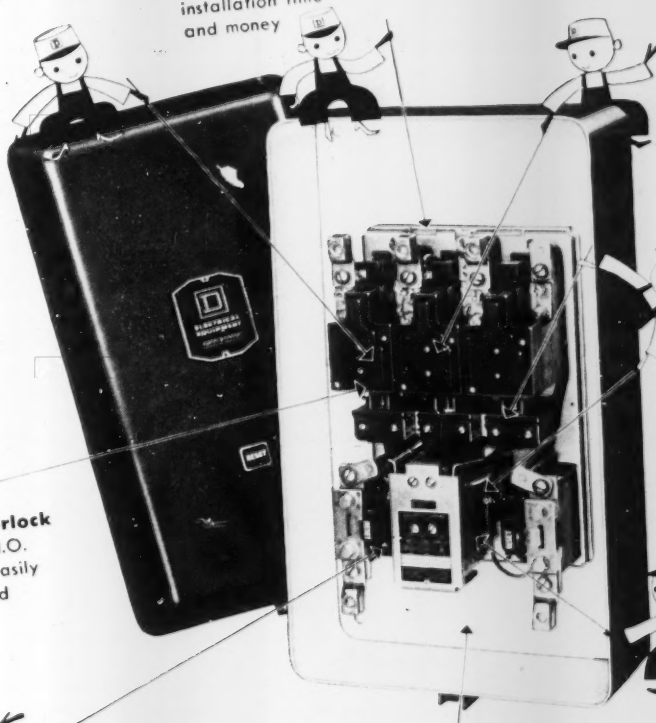
Waste is minimized with Superex because of the variety of thicknesses available. Special shapes and intermediate thicknesses between those shown are also available.

JOHNS MANVILLE PRODUCTS

Johns-Manville *first in* **INSULATIONS**

NEW Square D Size 4 Starter

Feature-packed!



"Hook-on" base design saves installation time and money

Special sintered metal contacts last longer

High arc-interrupting capacity with "magnetic yoke" arc chamber

Coil and contacts removable from front **without disturbing power wiring**

Up to 8 interlock circuits (4 N.O. and 4 N.C.) easily front-mounted

Permanent air-gap lengthens magnet life

New coil holder simplifies coil change

All parts front-mounted for easy service and maintenance

The highest degree of accessibility, flexibility and compactness—with no sacrifice of performance and long life. That's Square D balanced design—and you'll find it in every size Square D starter.

"Off-the-Shelf" Parts Kits, another Square D convenience feature, make normal maintenance easier than ever. Each kit contains parts to replace all load contacts and finger springs. Electrical interlocks also available in kit form.

Write for Bulletin 8536, Square D Company, 4041 North Richards Street, Milwaukee 12, Wisconsin

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS

SQUARE D COMPANY

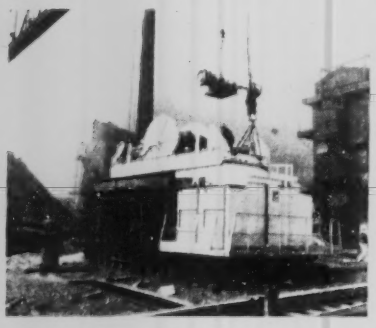
1903 • **50** YEARS OF DESIGN LEADERSHIP • 1953

NEW DRAVO LIGHT-WEIGHT MAN TROLLEY INSTALLATION BROUGHT THESE RESULTS AT PITTSBURGH COKE & CHEMICAL . . .

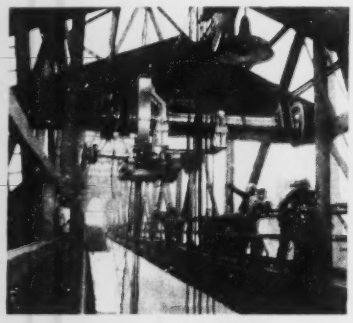
	NEW TROLLEY	OLD TROLLEY
Bucket Ore Load	8½ tons	5 tons
Operating Cycle	50 seconds	60 seconds
Free-digging Tonnage	600 tons/hr.	300 tons/hr.

Early in 1952, engineers at Pittsburgh Coke & Chemical Company foresaw a materials-handling problem which would arise when a new blast furnace was added to the plant's facilities. The existing materials-handling bridge would be unable to keep up with expanded operations when the new furnace began functioning. Dravo engineers were called in to discuss the problem.

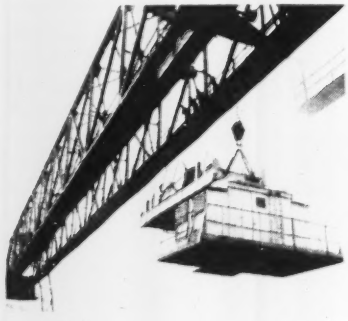
The result was a decision to install a new Dravo light-weight man trolley which would permit using a larger bucket. This increased the bridge's capacity at ⅓ the cost of a new bridge. Installation time was only 13 hours. Here is how it was done.



1 Designed and constructed by Dravo Corporation, the new man trolley was blocked on cribbing below the bridge. Each axle was lifted 75 ft. to the trolley runway.



2 Both axles were left suspended above the runway until the trolley frame with it, attached machinery house and operator's cab was hoisted, placed on runway rails and supported with the trolley jacking lugs.



3 The trolley frame was hoisted into place by steam-driven block-and-tackle. The trolley's all-welded construction with liberal amounts of aluminum used in the machinery house and operators' cab greatly reduced its weight.

4 It took only 13 hours to install the new trolley and remove the old one. With the short time the bridge was out of service, production of the two blast furnaces at the plant was not interrupted.

The installation of a Dravo light-weight man trolley on existing materials handling structures still in good structural condition is the practical way to increase the capacity of ore and coal bridges to meet growing production requirements.

The weight saving factors of the new trolley are utilized in a larger capacity bucket without increasing the over-all load on the bridge. Some of the weight-saving factors include: All-welded frame of corrosion-resistant alloy steel, an aluminum sheathed machinery house and operator's cab, heat treated axles and the use of high-strength alloy components elsewhere.

A new Dravo light-weight man trolley can step up your bridge performance. If you have a materials-handling problem, we will be glad to discuss it with you and suggest a logical solution.

DRAVO

CORPORATION

NEVILLE ISLAND, PITTSBURGH 25, PENNA.

DESIGNERS and BUILDERS

Bridges and Unloaders • Tower-type Unloaders
Whirler Cranes • Floating Cranes
Dravo Rail Clamps • Barge Shifters
Modernized Trolleys for Existing Bridges

YOUNGSTOWN
Cold Finished
CARBON AND ALLOY STEEL BARS
Uniformly satisfactory in service because—
Machinability is outstanding
Tolerances are uniformly close
Metallurgical characteristics are rigidly controlled

QUALITY YOUNGSTOWN SERVICE

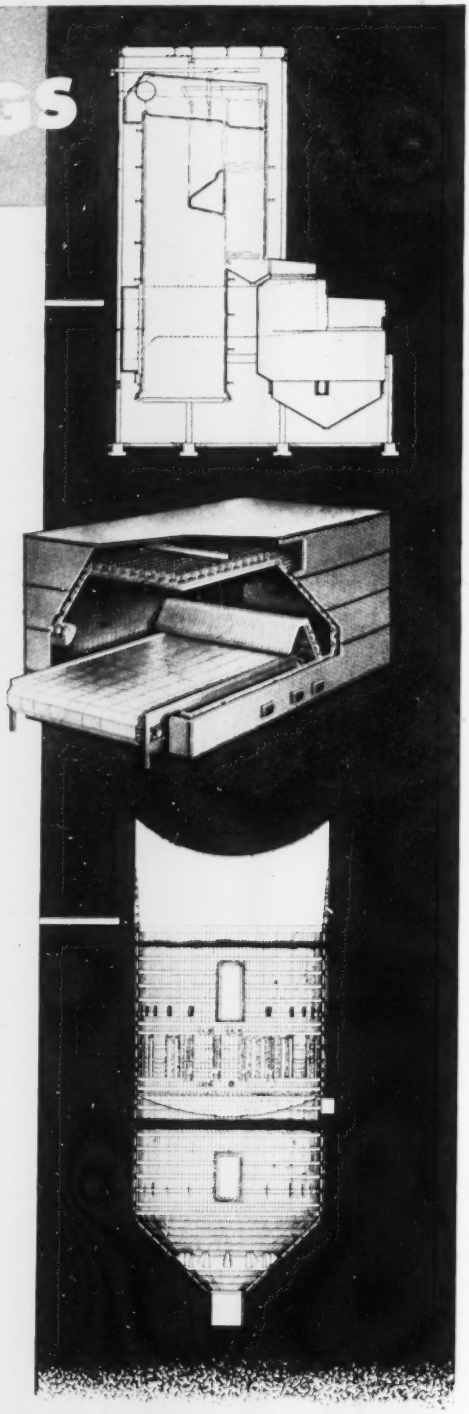
OF PRODUCING STEEL

●Here's why the bars you get from Youngstown will meet your exact requirements. They're drawn from steel produced by an organization that's been making and rolling highest quality steel for 50 years.

Youngstown Cold Finished Carbon and Alloy Steel Bars are furnished in standard shapes and sizes, in both coils and straight lengths. For further information, phone or write our nearest District Sales Office.

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*
General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.
PIPE AND TUBULAR PRODUCTS - CONDUIT - BARS - RODS - COLD FINISHED CARBON AND ALLOY BARS - SHEETS - PLATES - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RAILROAD TRACK SPIKES

RIGHT IN THE HEAT OF THINGS



in Power Plants

. . . you'll find economy-minded B-L boiler enclosures in power plants all over the country. Size poses no problem: B-L engineers them all from small HRT settings to huge 10-story jobs like the one illustrated.

in Chemical Plants

. . . Bigelow dryer furnaces deliver a tremendous volume of hot gases—as much as 93,000,000 BTU's—at predetermined temperatures to rotary dryers. Furnaces process coal, sugar, salts, grain—any product from which moisture must be removed.

in Oil Refineries

. . . B-L offers a complete, one-source service of engineering, materials, and erection help for castable regenerators and pressure vessels of all kinds. Construction can be either castable, tile or a combination of the two.

yes, and in the metal, glass, cement and sugar industries (others, too!) B-L enclosures are right *in the heat of things* Write today for complete information.

BIGELOW-LIPTAK *Corporation*

and Bigelow-Liptak Export Corporation

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UNIT-SUSPENDED WALLS AND ARCHES

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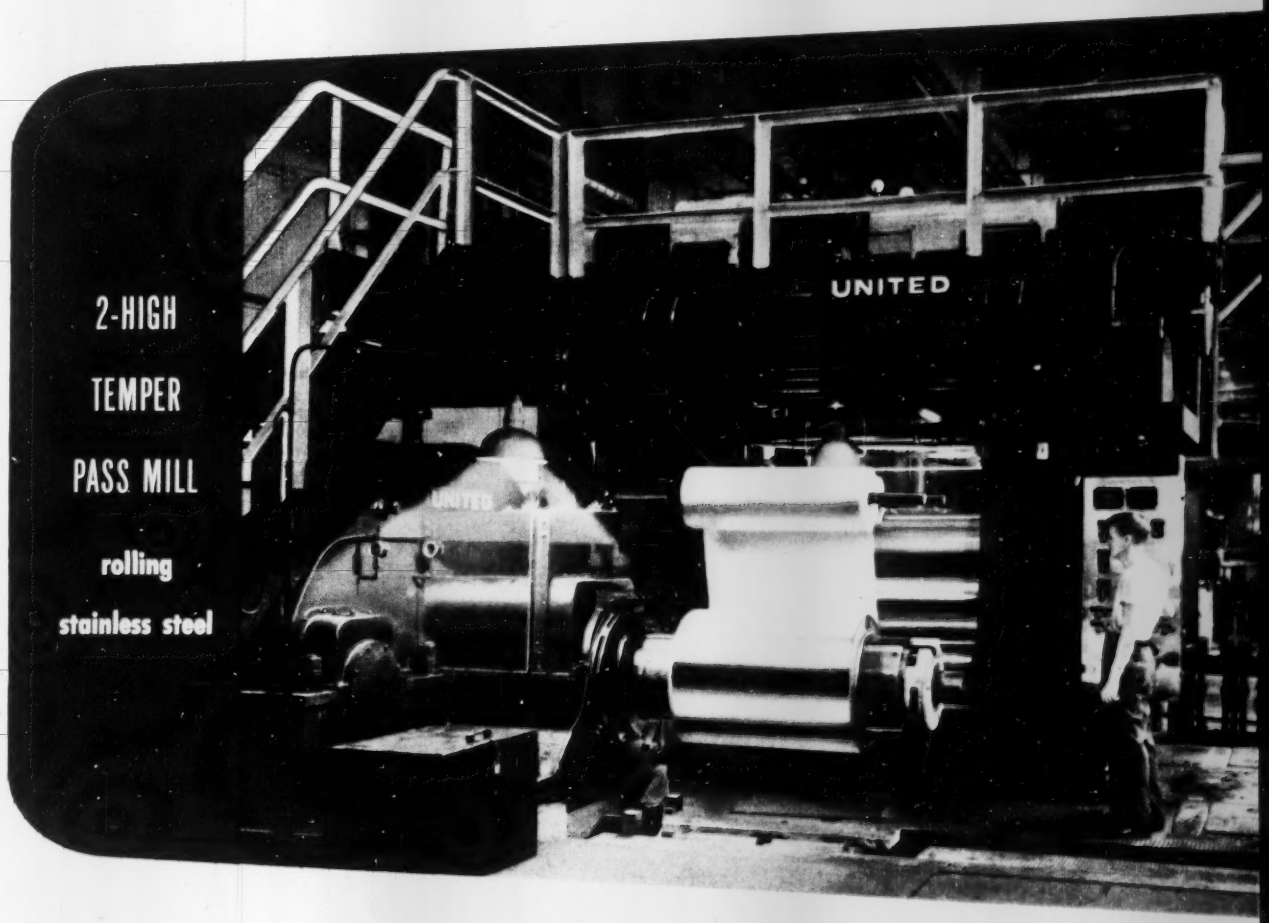


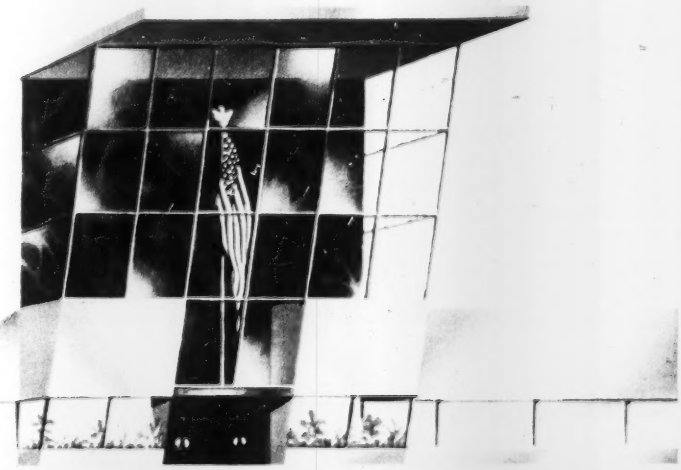
Designed and Built by

UNITED

ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

STAINLESS STEEL BUILDING ENTRANCE



UNITED *can serve you no matter where in the world you are.*

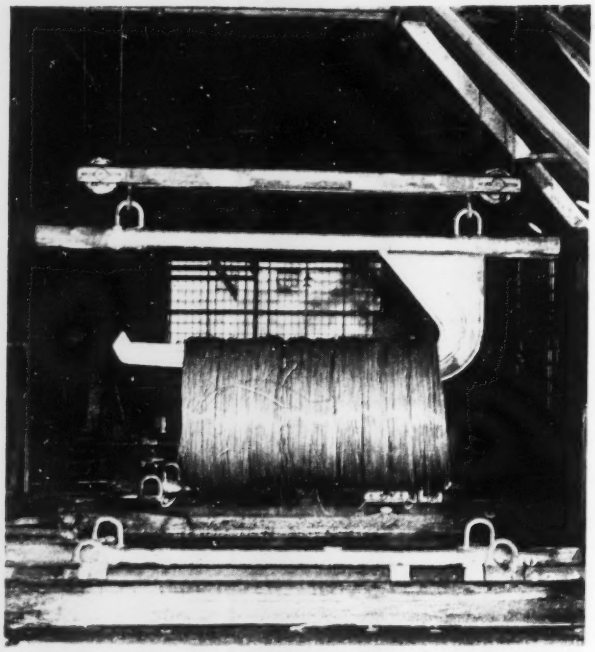
How

"Failed in 6 months"

was changed to

"Excellent condition after 5 years!"

...in one of the Nation's leading wire mills



This Weldco hook of Monel, emerging from a 12% sulphuric acid solution, is carrying a 5,000 lb. load of wire. It is one of many Monel hooks at the John A. Roebling's Sons Corp. The first hooks installed have already given over 5 years of service life. Other materials failed in as little as 6 months.

Back in 1948, some of the pickling hooks at John A Roebling's Sons Corp. of Trenton, N. J., were giving a service life of only six months.

This, the engineers decided, was entirely too short.

They had heard excellent reports about Weldco hooks of Monel, manufactured by the Youngstown Welding and Engineering Company—reports that told of Monel hooks still in service after ten years.

So they began replacing their hooks with corrosion-resisting Monel.

The conditions were severe. The hooks had to go through a 12% sulphuric acid solution at a temperature of 170° to 180° F. carrying a load of 4200 to 5000 lbs. of coiled wire. Each hook had to handle about 60 tons of wire a day.

Six months passed—a year—five years—the first hooks were still in service. What's more they showed practically no signs of corrosion. But the spreader beams to which the hooks were welded had started to corrode from the fumes. Since the hooks were still in excellent condition they were returned to Youngstown for new spreader beams—this time of Monel pipe. They are now back at work giving the same dependable service.

Here's why Youngstown Welding and Engineering Company use Monel for their Weldco hooks:

- Long life because of Monel's resistance to corrosion from sulphuric acid solutions and fumes.
- Light weight for easy handling because of Monel's strength.
- Ready maintenance because of the fabricated construction and Monel's weldability.
- No breakage because of Monel's ductility.
- Extra heavy loads because of Monel's strength.

Tough corrosion-resisting Monel equipment can help increase the efficiency of your own pickling room. Monel crates, racks, chains, hooks, and accessories are used by many of the nation's leading plants to give increased payloads and longer service life. For more information on how Monel can help you, write for "Where Monel Pays Its Way in Pickling."

It is advisable to place equipment orders with your supplier well in advance of scheduled use. Distributors of Inco Nickel Alloys can supply the latest information on availability from warehouse and mill.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

Inco Nickel Alloys

MONEL® • "R"® MONEL • "K"® MONEL
"KR"® MONEL • "S"® MONEL • INCONEL® • INCONEL "X"®
INCONEL "W"® • INCOLOY® • NIMONIC® ALLOYS • NICKEL
LOW CARBON NICKEL • DURANICKEL®

Monel... *for minimum maintenance*

Metalworking Outlook

The Tax Problems

Expect a government decision on taxes by December. Staff experts from the Treasury department and Congress are trying to reach agreements now on an omnibus tax measure that will go in the House hopper in January. The big decisions are what to do about: The $5 billion a year in federal revenue that will be lost when the excess profits tax expires and a 10 per cent individual income tax cut goes into effect Jan. 1; our irrational excise system depreciation reform; and regular corporate taxes.

The Tax Solutions

As it looks now, no new excess profits tax will go into effect and nothing will be done to restore the 10 per cent cut in income levies. The excise system will probably be widely revamped. Watch for a general tax on all manufactured products except food and medicines at the manufacturers' level to replace the present hodgepodge of excises. An estimated 4.5 per cent levy would bring in enough revenue to match the income from the old excises. But that 4.5 per cent may be hiked a point or two to make up for part of the $5-billion loss in income and excess profits taxes. Expect partial reform on depreciation procedures, but don't look for any drop in the regular 52 per cent corporate tax rate.

Earnings, Savings High

Political considerations rule out any personal income tax hikes, even though earnings and savings are still high. Individuals saved $3.7 billion in liquid form in the second quarter of 1953, according to the latest figures of Securities & Exchange Commission. That compares with $2.9 billion in the first quarter and $1.4 billion in the second quarter of 1952. The April-June figure may well be the high for this year, although the national average income before taxes in 1953 is certain to exceed $4460, the 1950 total which is the latest available.

They Guarantee Wages

Warehouse & Distribution Workers Local 688 of AFL's Teamsters Union have negotiated 20 contracts with St. Louis employers which provide a guarantee of 2000 hours of work per year for the five-year duration of the contracts. Edwin Shields Hewitt & Associates, Libertyville, Ill., point out that the contracts get around one of the problems with guaranteed wages (p. 46) by assuring work for the "normal" work force, not all employees. Eligibility for coverage is based on seniority.

Social Benefits in 1960

Social Security Administration actuaries conservatively anticipate that 18 million to 24 million persons will be drawing benefit checks 50 years from now. The total cost of the program will range from $12 billion to $16 billion annually. By 1960 they expect that the 1952 total of 3.8 million

The Market Outlook—p. 133 The Technical Outlook—p. 85

beneficiaries will have increased to 7.4 million. They also believe that if employment continues high and cost factors such as fertility, mortality, retirement and remarriage rates are favorable, the trust fund will reach some $3.5 billion in 2050.

Sign of the Times

An aircraft company wants to diversify into the nonmilitary field. Bell Aircraft Corp., Buffalo, wants SEC approval to acquire control of American Wheelabrator & Equipment Corp., Mishawaka, Ind. The Indiana firm is a subsidiary of Equity Corp., a New York investment company which also controls Bell. The transaction, which Equity approves, would involve a shift in control of American Wheelabrator from Equity to Bell.

Negotiation and Antitrust Cases

Negotiated settlements will be reached wherever possible in an effort to clean up the big backlog of antitrust cases now docketed in the Justice department. Attorney General Herbert Brownell seeks to get current so as to clear the way for bringing new antitrust actions. Since he took office last January the department has filed eight new civil and 16 new criminal antitrust suits, a record, he says, that refutes "charges that the administration would favor big business."

More Splash in Shipbuilding?

Watch for a mild spurt in American shipbuilding. U.S. shipyards will find it easier to build merchant vessels for foreign operators under a new set of rules issued by the Maritime Administration. All restrictions on such construction are lifted except those aimed at preventing the ships from trading with Iron Curtain countries or ending up in Communist hands. Regulations were relaxed because of easier steel supplies and a drop in domestic demand for new vessels.

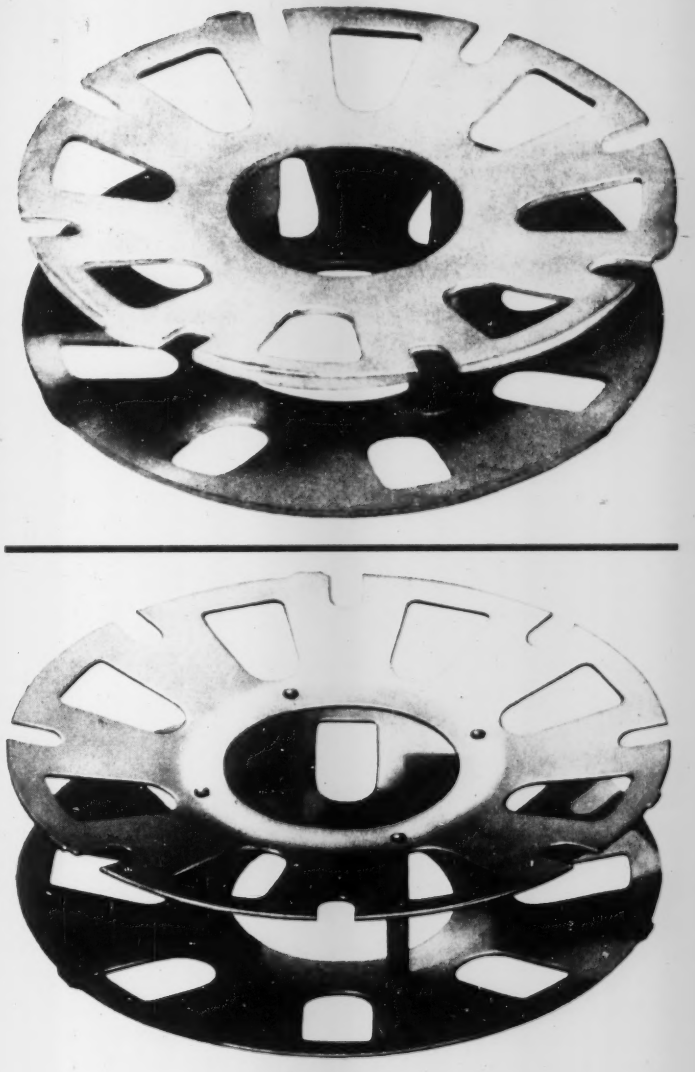
Straws in the Wind

The petroleum industry along the Texas Gulf Coast will spend $190 million for expansion during the next two years, the Houston Chamber of Commerce believes . . . McLouth Steel Corp. purchased a six-stand, 60-inch hot strip mill from Mesta Machine Co. . . . Production of Henry J's will be resumed Oct. 26 following signing of a contract by Kaiser Motors Corp. and United Auto Workers CIO; limited operations are expected until model changeover is completed late this year . . . Leaks cost the nation $2 billion a year, estimates C. A. Benoit Jr., president of Permatex Co. Inc.

This Week in Metalworking

Leasing is no cure-all for all marketing problems, but it merits investigation (p. 45) . . . Despite anticipated further reductions in the steel ingot rate, steel executives see satisfactory business ahead (p. 47) . . . Republic Steel Corp.'s expanded steelmaking operations will be a basis for continued diversification (p. 48) . . . Power-driven saw makers see a cut in 1953 sales $10.5 million compared to $12.3 million in 1952 but the volume still stacks up well with the $10.7 million rate in 1951 (p. 49) . . . American industry spends $9-$10 million a year on packaging materials and services (p. 51).

How Stainless Steel Stampings Save Money Here



Cast pilot rings (at top) for an oil-fired circulating heater warped and disintegrated sometimes after only a few months' service. The rings wouldn't stand up at cherry-red heat, and replacements were expensive.

To increase service life of the pilot ring and reduce costly maintenance, the manufacturer replaced the castings with the stamped assembly shown below. This unit is made of 16-gage Armco 17, Type 430, stainless steel strip and $\frac{1}{4}$-inch diameter Armco 17 spacer rods. The new parts weigh about one-third as much as the castings.

Hundreds of stainless steel applications in high temperature jobs show that the manufacturer can expect to save far more in replacement expense than the additional cost of the stainless steel. Moreover, he will have a new quality sales point.

STAINLESS STEELS TO SUIT CONDITIONS

Armco 17 does well in most fiery jobs withstands temperatures up to 1550 degrees F without destructive scaling. Yet there are numerous other stainless grades for more severe service than in this oil burner. Certain grades will resist temperatures up to 2000 degrees F. Others have especially high tensile and creep strengths at elevated temperatures. For information on how to select a stainless steel for high temperature service write for the booklet, "Armco Stainless Steels for Heat Resistance."

ARMCO STEEL CORPORATION

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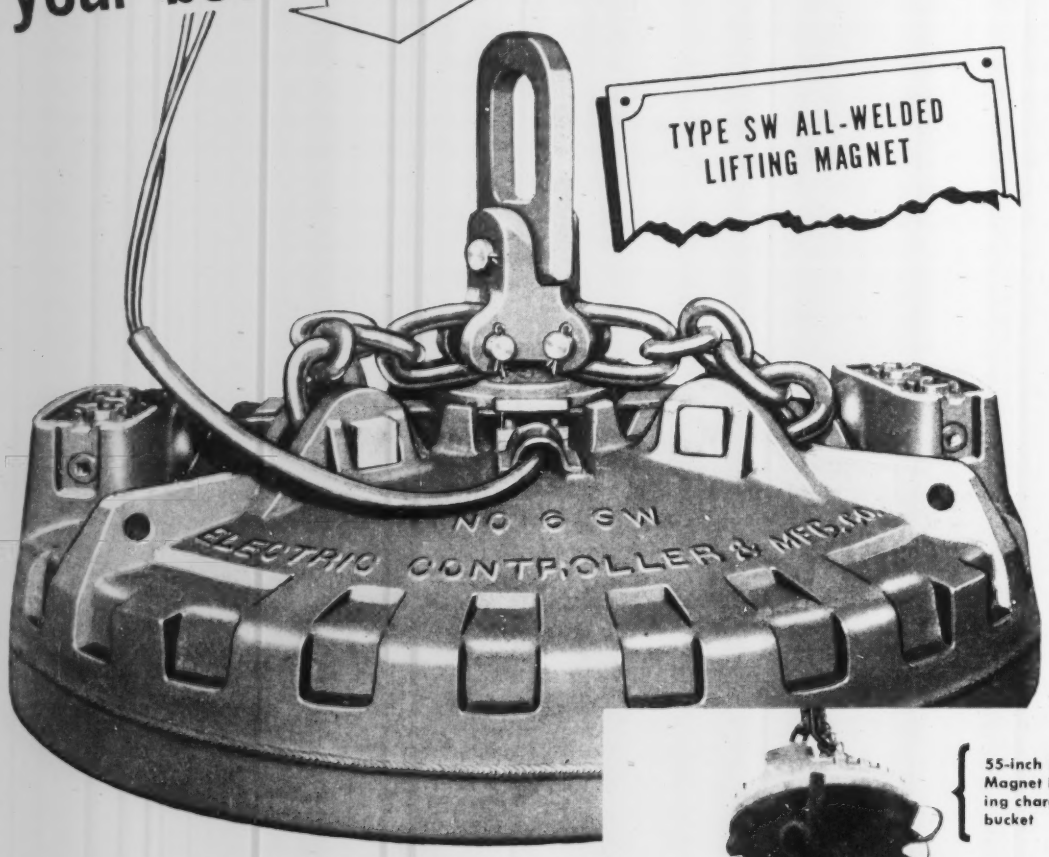
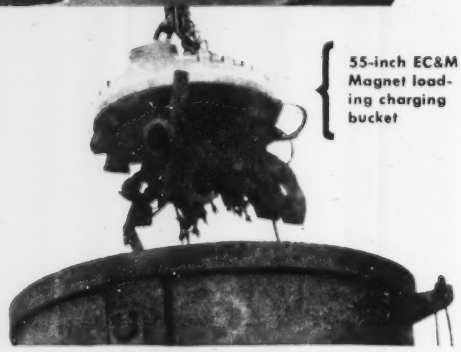
your best buy in magnets





55-inch EC&M Magnet loading charging bucket

Month in and month out, EC&M Type SW ALL-WELDED Lifting Magnets give evidence of speedy handling of pig and scrap iron. *Costs are lower because output is higher.*

Equally important is the fast release of the load at the point of discharge. EC&M Automatic-Discharge Magnet Controllers are adjustable to suit material handled and size of magnet; adjustment permits compensation for voltage variation. *This exclusive EC&M feature cuts down the time between magnet-trips.*

For topmost performance, specify EC&M Lifting Magnets. *The high return quickly repays the low initial cost.*

advantages of ALL-WELDED magnets

1. Sealed against entrance of moisture.
2. No pole-shoe tightening maintenance.
3. Better proportion of coil space.
4. High lifting capacity throughout magnet life.

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THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Essential for Peace

In the confusion concerning world affairs major emphasis seems to be placed upon the differences between the attitudes of rulers or governments rather than upon the feelings—cordial or hostile—of the great masses of people. In tremendous areas of the world, the official voice of government represents the view of a dictator, a minority leader or a usurper whose ideas have little or no connection with the interests of the people he should represent.

This situation deserves more attention than it has received because it is a fundamental obstacle to world peace. We cannot hope to enjoy international tranquillity as long as millions of persons in dozens of nations are in no position to speak for themselves.

Many American visitors to far-off places throughout the world probably have noted the plight of the forgotten millions, but it has remained for Trygve Lie, former secretary-general of the United Nations, to spell out the bitter truth in unforgettable words. In a recent meeting in connection with the United Jewish Appeal in Cleveland he made this sober, profound and provocative statement:

"Most human beings are hungry today most of the time; more than half of the people in the world are illiterate; half the world's population is constantly ill and expects to die before the age of 35; almost two-thirds of the people of the world have a per capita income of less than $100 a year; most of the peoples cannot afford decent clothing, housing and recreation; hundreds of millions are kept in conditions of bondage and peonage not far from slavery."

Experienced world travelers, who penetrated beyond the show places of big cities, know that Mr. Lie's appraisal is painfully accurate. To hundreds of millions the next meal is infinitely more important than whether they live under communism or capitalism, or whether they are enslaved or free.

In the United States and some other countries the standard of living is increasing. In almost all others it is standing still or decreasing. We cannot enjoy world peace until the "have-nots" begin to see a chance of catching up with the "haves."

E. L. Shaner

EDITOR-IN-CHIEF

COLOR METALLOGRAPHY: Specialists in powder metals research at Firth Sterling Inc., Pittsburgh, were exploring the possibilities of color metallography in helping them to learn more about sintered carbides. When ordinary methods did not yield the results they desired, they developed a heat tinting technique that opens up new avenues for studying

structure-property relationships. By means of this new technique, each constituent and phase present in multicarbide mixtures can be identified in color photomicrographs at 1500 diameters.

We believe metallographers and metallurgists will be interested not only in the details of the heat tinting procedure developed by Firth Sterling but also in the excellent colored photomicrographs of mixed carbides reproduced on pp. 93-96. Note that tungsten carbide grains are gray, tantalum carbide areas are yellow and the cobalt matrix is blue.

This unusual presentation is made possible by the co-operation of Firth Sterling Inc., Eastman Kodak Co., John P. Smith Printing Co., the art department and Penton Press Division of the Penton Publishing Co. and the editors of STEEL.

OHIO'S JUNIOR SENATOR: Throughout the nation many persons are wondering what to expect from the new junior senator from Ohio who has just been named by Gov. Frank Lausche to serve the unexpired term of the late Sen. Robert A. Taft. The appointee, Thomas A. Burke, has been mayor of Cleveland for nine years, having held the office longer than any other person. Lausche and Burke nominally are Democrats, but they manage to win the support of many Republicans.

One reason for their popularity is that they thumb their noses at the Democratic party machine bosses. Another is that they are almost as independent of "new deal" and "fair deal" national organizations as they are of local political bosses. Still another reason why they win votes is that while they are fair to unions, they do not permit union leaders to throw their weight around.

Thomas Burke will be more inclined to support constructive Eisenhower programs than to hinder them.

OUR LEVIES MODERATE: In current discussions of foreign trade problems many persons take it for granted that duties on imports to the United States are high. American Tariff League Inc. has made a study of custom duties levied by scores of nations (p. 55) and its findings are that the United States has more moderate tariffs than most countries.

In 1952, United States imports totaled $10,745 million on which custom duties of $575 million were collected. This is a duty of 5.3 per cent per dollar of imports. In 1951, this ratio for the United States was 5.1, whereas for Chile it was 46.3, for United Kingdom 25.6, France 10.6, Italy 8.4, Belgium 2.9 and Japan 1.6. From 1937 to 1951 these ratios changed by the following percentages: Chile 21, United Kingdom 20, France 43, Italy 29, United States 68, Belgium 50 and Japan 65.

On the basis of these figures, we're not as black as some critics contend.

* * *

NEW LABOR SECRETARY: President Eisenhower's appointment of James P. Mitchell to succeed Martin P. Durkin as secretary of labor came as something of a surprise. Right up to the last minute there had been hints that the job would go to Harold Stassen.

Mitchell takes up his new duties with two qualifications which should work in his favor. First, as an assistant secretary of the army and with a decade of experience in jobs in the federal government he should know his way around the intricacies of Washington officialdom. Secondly, as industrial relations director of two metropolitan department stores, he has had valuable and extensive experience in dealing with unions. It is rather significant that CIO President Walter Reuther says that Mitchell "has a good reputation among labor people who have dealt with him across the bargaining table."

Respect from both sides should help him in his difficult job.

ACCENT ON AUTOMATION: Recently Ray H. Sullivan, vice president and group executive of Ford Motor Co., declared that when Ford's present plants in Brook Park and contemplated plants in Brook Park and Walton Hills are completed, these Cleveland suburban operations will constitute the second largest industrial concentration in the Ford empire. "Only the Rouge plant at our headquarters in Dearborn (Mich.) will be larger."

Mr. Sullivan indicated that automation will be developed vigorously in the Cleveland plants. "Automation," he said, "permits for better use and design of machine tools. Conveying and loading mechanisms now can be built to serve the full capacity of the tool. Thus, in addition to direct labor savings, this new technique gives us great improvements in mechanical efficiency."

VALLEY MOULD AND IRON CORP.

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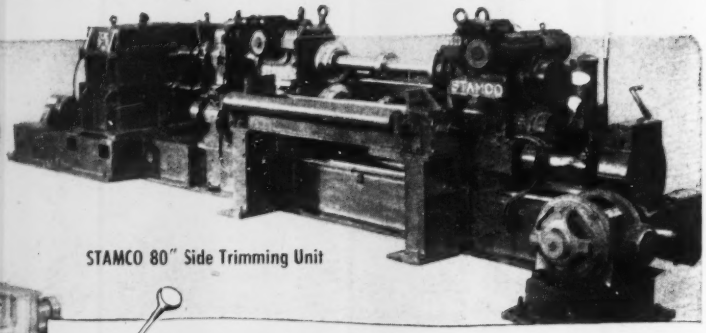
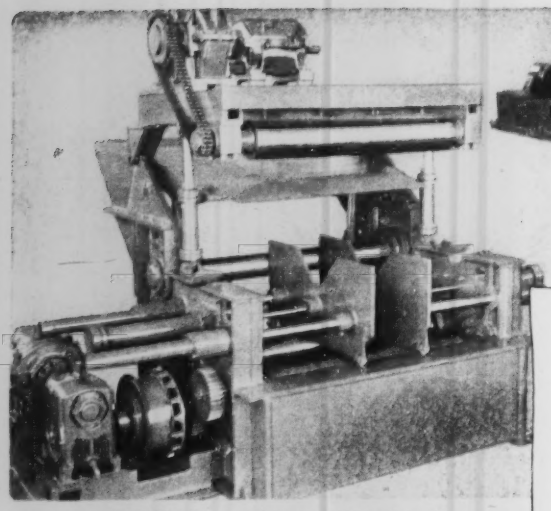
For Special Operations in Steel Mills...



STAMCO 80" Side Trimming Unit



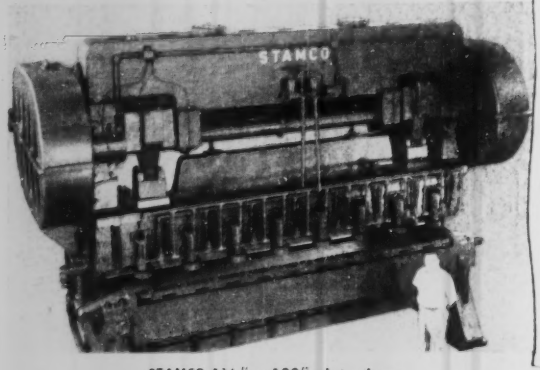
STAMCO Coil Box, coil opener and feeding unit

Call or write

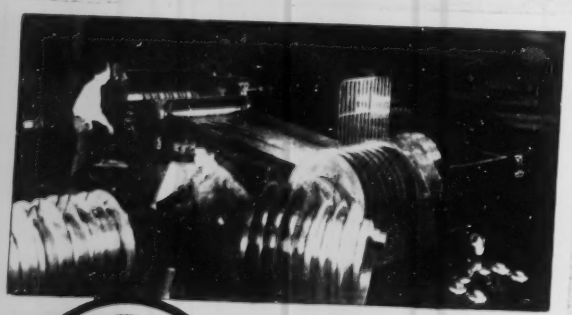
Stamco

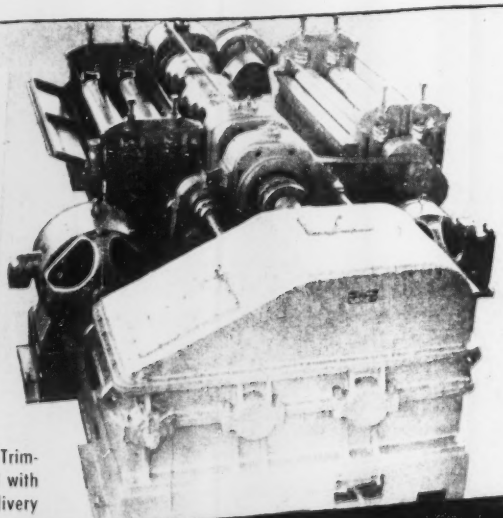
for the equipment you need

For mill or warehouse use on ferrous or non-ferrous material, STAMCO has a model or size to fit your needs—or can make it for you. If you use trimming units, plate shears, slitting units, coil openers or any other special steel mill equipment, it will pay you to write us. No obligation.



STAMCO 1¼" x 180" plate shear





STAMCO 48" Slitting & Coiling Line 15000# coil capacity

STAMCO 72" Heavy Gauge Side Trimming and Slitting Unit equipped with a double set of feed and delivery pinch rolls.

• LAY YOUR SHEARING PROBLEMS AT STAMCO'S DOOR •

STAMCO, Inc., New Bremen, Ohio

Major Advantages in Leasing Capital Equipment

For the Equipment User:

1. It postpones large capital outlay, but permits the use of modern equipment at low initial cost.
2. Equipment can be tested under leasing plants, by-passing the risk of buying the wrong machine.
3. It minimizes problems of maintenance.
4. The cost of leasing can be deducted as a business expense.

For the Equipment Maker:

1. Rentals come in regularly, leveling off the income cycle.
2. Rentals may bring greater total income than outright sale.
3. Leasing can help expand the sale of supplies used with the leased items.
4. Markets can be expanded by leasing equipment to companies which cannot afford to buy it.

Leasing: A Competitive Vitamin?

Many companies particularly those short of working capital, are investigating leasing's advantages. Pressure mounts for clarification of tax angle

LOOKING for new methods to improve your position as the competition gets rougher?

One angle to explore is equipment leasing, either if you're an equipment builder or user. "Leasing has definitely put more of our equipment into the market," says Yale & Towne Mfg. Co. It leases materials handling trucks made at its Philadelphia and Chicago production facilities. One metalworking firm saved $50,760 a year by changing from 45 salesman-owned cars to leasing.

Look Before You Leap—Leasing has many advantages for both the lessor and lessee (see the accompanying lists). But industrialists who have studied the the proposition advise: Don't jump into the act too quickly.

Biggest headache has been the tax issue which revolves around the question of whether the transaction is a bona fide lease or a conditional sale. Most leasing programs carry an "option to purchase" arrangement and there's where the trouble arises. The Treasury department has stated: "If there is any considerable disparity in the remaining amount to be paid for equipment and the fair market value at the time the option to purchase is exercised, Treasury department policy would be to consider the transaction a sale."

Ambiguous—There's much room for haggling within those boundaries. Machinery & Allied Products Institute's Council for Technological Advancement cites the need to clarify the issues.

Another major difficulty with leasing arises as a result of one of its major advantages—that rental costs may be deducted from profits as a business expense. Leasing costs are usually much higher than the depreciation that may be charged against profits when a machine is purchased outright, so that situation has given a forced-draft life to leasing in this era of high taxes. If taxes go down, would the use of leasing shrivel up like a spent balloon? Some companies think so—for example, Warner & Swasey Co., machine tool manufacturer, which comments: "We feel that in view of the end of excess profits tax and the predicted adoption of a more realistic depreciation program the hue and cry for leasing will decline." Other business executives believe that taxes will never go down far enough to eliminate all of leasing's tax exempt attraction.

The History—Leasing's not new; several companies have been leas-

MACHINE TOOL USERS

14.0% NOW RENT SOME

In plants employing	NOW RENT Yes	No
20-49	6.3%	93.7%
50-99	8.8	91.2
100-249	15.5	84.5
250-499	16.9	83.1
500-999	18.9	81.1
1000 plus	20.6	79.4

11.9% Interested in Renting

ing equipment for years. But the practice is the exception, not the rule, among both equipment makers and users and probably always will be. A STEEL survey of 2000 machine tool users shows the quantity of leased equipment is relatively small. Since the figures also include tools leased from the government, the total for commercially rented equipment is even smaller.

American Machine & Foundry Co. and International Business Machines Corp. are two veterans in the leasing field. The former leases cigar-making machines, pretzel equipment, bowling pin setters and other devices. IBM leases business machines. Several financing firms also have had long and wide experience purchasing equipment from manufacturers and then leasing it. Rentco Inc., Philadelphia, is one.

The Participants—Other companies are just getting into the program. Remington Rand Inc. just announced a leasing plan for its products. Kearney & Trecker Corp., Milwaukee, maker of milling machines, started leasing this year and expects to rent out more than $1 million worth of equipment in 1954. Falk Corp., Milwaukee, leases from other manufacturers commercial and industrial trucks.

Leasing plans vary, but Rentco's is typical of most. It has a maximum period of nine and a half years and a minimum commitment of five years, after which a lessee may cancel his contract under certain options. The leasing rates, based upon the original cost of the equipment, are as follows: 39 per cent for the first year, 30 per cent for the second year, 21 per cent the third, 16 per cent the fourth, 12 per cent the fifth and after that the rates jump down a sliding scale to slightly more than 4 per cent.

Leasing is no cure-all, can even result in some expensive tax difficulties and may decline in popularity in direct ratio to a decline in taxes. But it is a way for small or other companies short of capital to equip themselves with modern tools of production at low initial outlay. In the leaner times ahead, businessmen agree, that factor may give a big boost to leasing to the benefit of equipment builders, users and the nation's economy generally.

Guaranteed Wage: An Unattainable Ideal?

U. S. Chamber of Commerce study suggests the nation's dynamic economy prohibits such a plan. What's really wanted, it says, is a more stable prosperity

THE GUARANTEED annual wage it's not the "cure-all" against depressions that its connotation carries to many. In reality, the guaranteed wage clamor is a demand for adequate job opportunities and high-level employment both are areas in which much progress has been made and in which industry must maintain its aggressiveness.

Those are the conclusions reached in a comprehensive study of the guaranteed wage problem by the U. S. Chamber of Commerce. Although a few companies have had a guaranteed wage plan in effect for many years, the program has not gained wide acceptance.

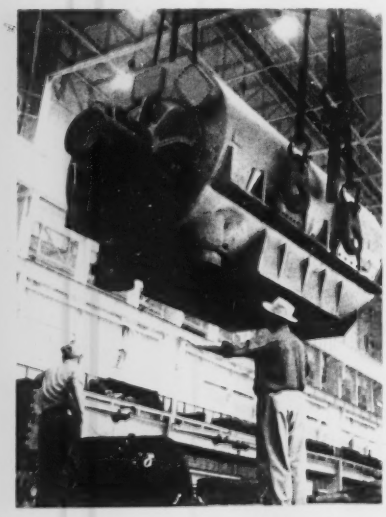
What Is It?—Entitled the "Economics of the Guaranteed Wage," the study points out that part of the controversy and ambiguity of the guaranteed wage is that there is no single acceptable definition of it. Just what is to be guaranteed is not definitely known. Some plans guarantee a stated amount of wages for a specific period, others a certain amount of work without mention of paycheck sizes; other plans may mean certain immunity from complete layoff. Practically all, however, provide definite exceptions, exemptions and suspensions in the guarantees.

One of the over-all problems involved in the guaranteed wage question is our constantly changing economy. One of the stated union purposes of the plan is to reduce labor mobility. The C of C poses the question whether this is possible or desirable with the constant shifts in location and development in industry brought about by technological innovations, new products, materials and machines which necessitate employment changes.

Theoretical, But — The current CIO guaranteed wage theory that jobs make payrolls, payrolls make markets and markets more jobs has a germ of truth, the study says, but what caused the sequence to break down in 1914, 1920, 1929 and 1937 when incomes and employment were high? Tied into the problem are the public's expenditure of its income, human psychological factors, technological advances, scientific inventions and many other complicated interrelated factors.

Tying the guaranteed wage program to the unemployment compensation program is also suggested by proponents. The C of C points out that, in addition to the legal questions involved, such a plan has many pitfalls. For example, there is no scientific way of determining what the exact level of benefits or guaranteed wage should be. Under some union proposals the guaranteed wage would be as attractive or nearly as attractive as wages paid for working which would destroy any incentive to work at all.

20 Out of 2600—A Bureau of Labor report in 1952 showed that out of 2600 collective agreements studied, only 184 provided some kind of a guarantee. Of these only 20, covering 12,000 workers, guaranteed wages or employment for a sub-



More Power per Pound

Billed as "the world's first completely inner-cooled" generator by Westinghouse Electric Corp., this 100,000-kilowatt giant is headed for Niagara Mohawk Power Corp., Buffalo. At 350,000 pounds, it's about 150,000 pounds lighter than the average unit of equal power. Coolant is hydrogen gas

stantial part of the year or throughout the year.

Business executives, the C of C states, who have adopted a private guaranteed wage plan stress that the guarantee is the result of natural stability or prior regularization of policies and programs. The guarantee is incidental, especially since most companies reserve the right to terminate it.

Basic Desire—"There is reason to believe," the report concludes, "that if we maintain reasonably stable prosperity in the years ahead, this is what the American people want and will settle for."

Healthy Slowdown Seen

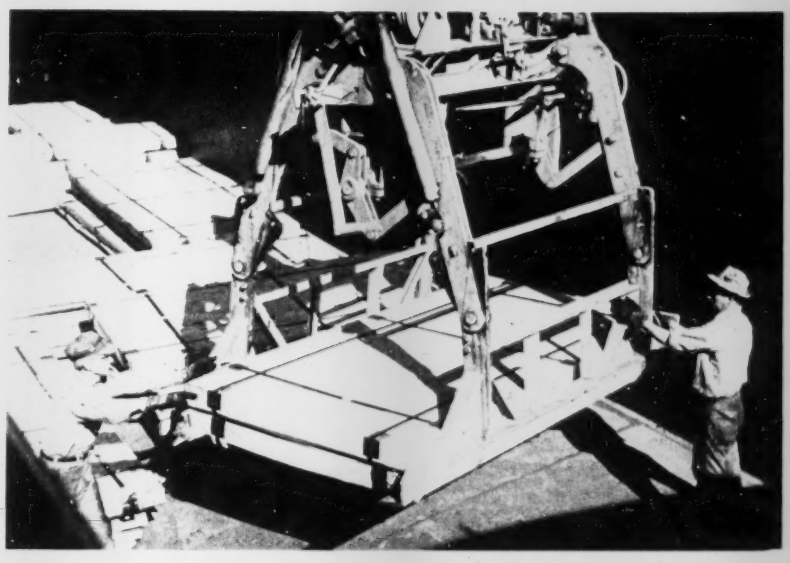
E. L. Ryerson predicts 85 to 90 per cent operating rate at Chicago AISI meeting

SIGNS of sharpening competition now appearing in steel should be welcomed by the industry, declared Edward L. Ryerson, chairman of the executive committee, Inland Steel Co., Chicago, at the opening session of the 1953 Chicago regional technical meeting of the American Iron and Steel Institute, Oct. 8.

Mr. Ryerson said veterans of the steel industry are amused to hear less-experienced steelmen bemoaning the fact that operating rates have dropped to 95 per cent of capacity. In many prewar years 80 per cent operations were considered good.

Healthier Though Slower—Anything around 90 per cent of capacity is healthier than the 100 to 110 per cent levels that have been maintained in recent years, Mr. Ryerson said. The bite of competition alerts the industry to clean house and to find ways and means of eliminating waste and increasing efficiency.

Recalling his prediction earlier this year that operations probably would shrink to between 85 and 90 per cent of capacity in fourth quarter, Mr. Ryerson said present indications are that won't happen. But he expects to see this come about in first quarter next year. Despite this, he maintains, the industry can look forward to a healthy condition.



First Barge Shipment from New Allenport Mill

First barge shipment of sheet steel from Pittsburgh Steel Co.'s new hot-rolled sheet mill at Allenport, Pa., gets ready to head down the Ohio river to the Mississippi and across the Intracoastal Canal on a 2257-mile trip to Houston. A total of 138 packages of sheet steel in various gages will make the journey

Honeycutt Predicts Good Steel Business in Future

WHILE over-all steel supply has finally overtaken demand, there are reasonable assurances of good business in steel for at least a few years to come. So said J. V. Honeycutt, Bethlehem Steel Co., Bethlehem, Pa., speaking before the National Association of Sheet Metal Distributors and National Wholesale Hardware Association joint meeting held in Atlantic City, N. J.

Good Signs — The basic demand factors Mr. Honeycutt referred to are:

An enormous demand for new highways which will require an estimated $7 billion per year for the next few years for construction and maintenance; population increases which indicate $20 billion will be needed to provide adequate school facilities in the 1950-1960 decade; post-defense expansion plans of industry, based on an analysis of nearly 100 of the country's largest corporations, forecast capital improvement spending in 1954 and 1955 at a rate of about 80 per cent of the 1952 level; the repair, replacement and improvement market in the residential home field will be the largest ever; and the replacement market for automobiles and appliances will be greater than ever before.

More Per Person—Mr. Honeycutt also pointed to growing steel consumption which is increasing at a faster rate than the population. "In 1951, 1365 pounds of steel ingots were produced for every person in the country. This year it is estimated per capita consumption will amount to 1400 pounds." This trend can continue through the creation of new demand for new products and new applications for steel mill products, he said.

Lee J. Haines, E. E. Souther Iron Co., St. Louis, was elected president of the National Association of Sheet Metal Distributors.

Iron, Steel Wages Still High

Total employment and average hourly wage payments in the iron and steel industry in August continued close to the record highs in July, the American Iron & Steel Institute reports. August hourly wages averaged $2.318 or 0.8 cent higher than July and employment was estimated at 695,600, down 400 from July.

The total industry payroll for the month was estimated at $287 million.

REPUBLIC STEEL EXPANSION

. . . a base for growing diversification

	1931	Jan. 1, 1953
By-product Coke Ovens	545	1228
Blast Furnaces	13	22
Open Hearths	68	78*
Bessemer Converters	2	2
Electric Furnaces	5	26
Steelmaking Capacity (tons)	5,564,000	10,262,000

*Many existing open hearths converted to oxygen

REPUBLIC STEEL CORP. has paused to take a look at itself as the U. S. steel industry girds for its first buyers' market in four years.

In a booklet entitled "Enterprise in Steel," Republic details its 84 per cent growth in basic steel production outlined in the table above. Calling the "light" steels (as contrasted with "heavy" rails, plates, and structurals) and alloy steels the "steels of tomorrow," Republic boasts an advance from a 50 per cent share of such production in 1926 to a 64 per cent share in 1950 as the largest single producer.

Mine to Market—Equally important is Republic's diversification in eight manufacturing divisions which currently employ 11,000 of the company's 70,000 total workforce. These include facilities for manufacture of kitchen cabinets (now under Republic's own name), exterior building panels, residential steel doors, steel buildings and windows, office equipment, radio antennas, drums and lockers, metal lathing and others.

In addition to those primarily steel fabricating operations, Republic produces a large share of U. S. output of titanium shapes and forms made from titanium sponge. An iron powder plant at Toledo, O., will have a capacity of 25 tons a day when in full operation next year. Republic will thus supply a large share of that domestic market also. Acquisition of the Owings-Sharpe Inc. plant at Magnolia, Ark., makes Republic a plastic pipe producer, too.

Double Profits—C. M. White, Republic president, told the Cleveland Society of Security Analysts that Republic's steel fabricating plants have been getting 18 per cent of the company's output under the recent emergency operations and "netting us a double profit." As other demands on Republic decline, Mr. White said, "we can feed more steel, perhaps as much as 40 per cent of our capacity, to these plants. This obviously would affect our profits."

At that, the corporation has not done badly in sales and income thus far in 1953. Sales and revenues for the first nine months of 1953 are $895 million, only $30 million short of last year's total take and indicating a new record year for Republic in 1953. The company did better than $1 billion worth of business in 1951. Net income for this year's third quarter was $14,018,033 compared to $5,158,092 in 1952 when income was affected by the big two-month steel strike.

Calm and Unafraid — Mr. White refused to "view with alarm" the easing off in steel production rates, which, he said, might well drop to 85 per cent or 80 per cent, or less. He pointed out: "At 90 per cent of today's capacity more steel would be produced than at 100 per cent operation in 1951 and 80 per cent of the steel industry's current capacity is well over the total capacity of 1946."

Republic's operating rate for the third quarter, 1953, was 93.4 per cent of capacity and for the first nine months of this year, 98.9 per cent of capacity.

Kaiser Steel's Net Shows Gain

Kaiser Steel Corp.'s unaudited earnings for the quarter ending Sept. 30 were up 57 per cent over a year ago, Henry J. Kaiser, president, announces. Earnings totaled over $2.6 million, equal to 64 cents per share of common stock after payment of preferred dividends.

The increased earnings reflect increased steel ingot production from the ninth open hearth furnace at the Fontana, Calif., mill which started operations in January, 1953, and from substantial shipments from the new tin plate mill which began operations a year ago.

Heavy Presses Find Home

Kaiser Aluminum & Chemical Corp., Halethorpe, Md., and Harvey Machine Co., Torrance, Calif., will operate two heavy extrusion presses each, says the Air Force.

Harvey is to construct its own facilities to house two presses and the Air Force will complete construction of the government-owned facility already partially constructed at the Kaiser-operated plant at Halethorpe. Thus a total of six of the previously planned nine extrusion presses will be operated by the following companies:

Harvey Machine Co., Torrance, Calif.	1- 8000-ton press 1-12,000-ton press
Kaiser Aluminum & Chemical Corp., Halethorpe, Md.	2- 8000-ton presses
Aluminum Co. of America, Lafayette, Ind.	1-14,000-ton press
Curtiss-Wright Corp., Buffalo, N. Y.	1-12,000-ton press

Freight Cars: And Goal To Go

Government pressure to get the nation's Class I railroads to meet the 1,850,000 freight car goal set for July 1, 1954, is mounting.

James K. Knudson, defense transport administrator, has issued an "urgent request" that orders for new freight cars be stepped up to meet the goal. Current ownership totals about 1,774,000 cars (see STEEL, Sept. 21, p.96) which means about 76,000 cars are still needed.

Orders have not been keeping pace with the goal even though the government has been granting rapid tax amortization. The next step if the program is not stepped up, Mr.

Knudson related, will be to place the matter in the hands of the Interstate Commerce Commission. The last resort would be to ask Congress to appropriate money for the additional car purchase.

Federal Research Funds Drop

Federal funds for scientific research and development programs are expected to decline in fiscal 1954, National Science Foundation reports. Estimated obligations for 1954 are $2074 million compared with $2187 million in 1953; expenditures are estimated at $2187 million in 1954 compared with $2205 million in 1953.

The two largest items in the program are for the Defense department with obligations of $1556 million and expenditures of $1636 million and the Atomic Energy Commission with obligations of $239 million and expenditures of $266 million estimated for fiscal 1954.

Airplanes: More Zip and Zoom

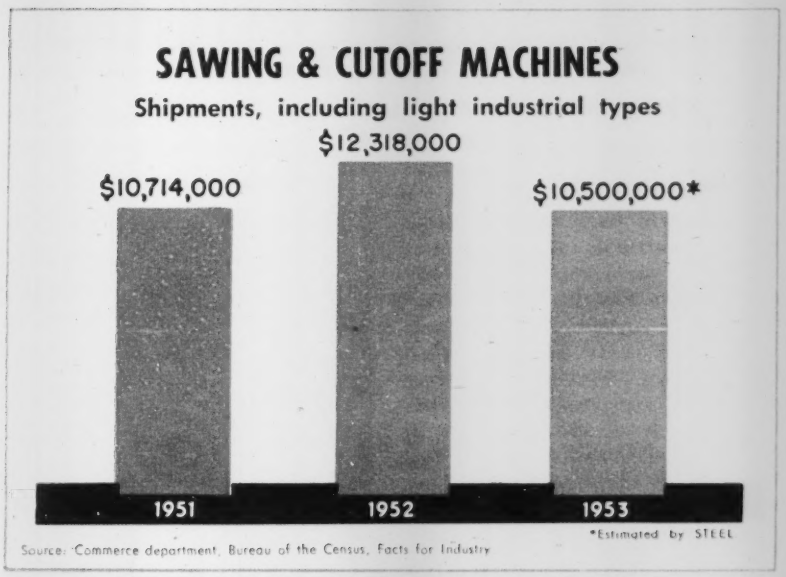
Aircraft engines of 300,000 hp, equal to the combined power of 180 diesel locomotives, are being predicted by aircraft experts. This power and problems of flying tomorrow's jet and rocket planes were discussed by designers at the National Aeronautic Meeting in Los Angeles.

LA's Growing Pains: Smog

The smog issue has erupted in Los Angeles again with public officials joining the man in the street in demanding more action from antismog agencies.

Gordon P. Larson, director of LA County Air Pollution Control District, states that action in the last five years "has resulted in a marked reduction in air contaminants. But LA's growth of 190,000 persons annually and $1 billion in new industry in the past five years have increased the problem."

Dr. A. V. Haagen-Smit, California Institute of Technology, states that automobile exhaust vapors pour 800 tons of pollutants into the LA skies daily. He urges radical revision of the city's transportation system to cut down gasoline fumes.



Saw Makers Take a Cut

Sales for some segments of the saw machine industry will dip this year. Heavier types will be hardest hit. But the drop won't be critical unless foreign competition gets worse

POWER-DRIVEN SAW makers see a cut in sales coming but they're not discouraged.

Dollar shipments will drop about 15 per cent in 1953 from 1952 for sawing and cutoff machines, including light industrial types but excluding contour and band saws. That will leave sales of about $10.5 million, a healthy volume indeed.

Follow the Trend—Like most machinery and equipment manufacturers, power-sawing machine producers have been enjoying wartime forced-draft sales. Now builders will have to settle for fewer sales and more competition. Heaviest chips will fall from dollar sales of heavy-duty machines, such as inserted or solid tooth rotary saws which have blades ranging up to six feet in diameter and a half-inch thick. Such machines are intended for use in steel mills or similar tough-duty applications.

Lighter sawing machines intended for woodworking or home workshop use won't feel the cut in sales much this year as these units have a wider variety of applications and are less expensive. Sales of contour sawing and band saw machines, for example, are expected to hold fairly even with 1952 when shipments amounted to $8,933,000.

A Challenger—In fact, DoAll Co., Des Plaines, Ill., is optimistic about its sales outlook for a new line of band saws which it expects to introduce at the American Society for Metal's show in Cleveland this week. The unit is described as a heavy-duty, faster-cutting band saw capable of improving rate of cut on 1020 steel, for example, from 2 or 3 square inches per minute to 9 through 15 square inches per minute. The saw is designed as a production tool and will perform many milling cutter operations as well as the ordinary splitting, slitting, and slotting functions.

General metalworking companies form the largest market for metal cutting saws of all types, taking approximately 50 per cent of the output. Foundries and nonferrous fabricators are prime markets and farm implement and electric motor manufacturers are large users. The automotive industry, surprisingly, uses fewer separate saw machines for plain sawing than any other segment of metalworking. That's because their saws are integral parts of other equipment.

Efficiency and Life—Saw blades

represent a distinct segment of the power saw industry. There are 2 or 3 manufacturers of blades for every saw machine producer. These blade makers expect to do about $35 million worth of business in 1953, about the same as last year.

New basic blade developments have been slow in coming, though there are constant refinements in tooth design and heat treatment to increase blade efficiency and blade life.

One factor which might well upset the saw machine makers' future is foreign competition. Since World War II foreign manufacturers haven't been cultivating the American market but there are signs that is to change. Modern circular sawing originated in Germany. Presently, two German, two British, one Italian and one French firm export to the U.S. market. One U. S. manufacturer of circular saw machines already reports "extreme" foreign competition based on lower prices made possible through lower European wage rates.

Hope It Stays—When asked for his company's business outlook, Fred L. Pfischner, secretary, E. T. Lippert Saw Co., Pittsburgh, said: "The outlook is pretty good because of all the different uses of saws. I hope it stays that way."

Mr. Pfischner knows, as do other saw makers, that the major problem now facing the industry will be one of getting customers rather than simply trying to satisfy delivery demands. That prospect, however, is no more somber for power saw machine makers than for builders of any other type of machinery.

PMI Highlights Labor Topics

Samuel P. Hull, vice president, Worcester Stamped Metal Co. of Worcester, Mass., was elected president of the Pressed Metal Institute at the organization's tenth anniversary meeting in Philadelphia.

Highlights of the four-day sessions included a panel discussion on wage incentives and talks on labor relations problems. The appointment of R. W. Breckenridge as technical director of PMI's new technical and engineering department was also announced.

H. J. Trenkamp, Cleveland, left, re-elected president of Gray Iron Founders' Society, presents society's gold medal to Frank G. Steinebach, editor of *Foundry*

Use More Research, Gray Iron Founders Urged

KNOW WHAT you are doing. Don't guess. Use research to eliminate the guesswork!

That's a suggestion given members of the Gray Iron Founders' Society Inc. by Francis L. Fletcher, a partner in the management consultant firm of Alderson & Sessions, Philadelphia, when he appeared before them at their 25th anniversary meeting in St. Louis.

Look Ahead—Don't be content with what you are doing today. Try to look ahead and see what the markets will be, what they will need. What's a good market today for castings may fade out ere long. And a market that you might not even dream of today may be uncovered for the future by good research, Mr. Fletcher pointed out.

An Ohio foundryman at the meeting knew what Mr. Fletcher meant by the emergence of new markets. The foundryman, who has been depending largely on the automotive and appliance industries for orders for castings, now finds the youthful air conditioning industry a rapidly swelling source of business. For a while, he was supplying a few hundred castings a month to producers of window air conditioners. In the last month or two the number has been stepped up to the tens of thousands. And what has surprised this Ohio foundryman is how far ahead of next summer the jump in castings demand has come from makers of window air conditioners.

Road to Success—"The companies that have been successful in the past and those that will be successful in the future are companies which have made a concerted effort to gather facts in terms of what these developments will mean and then have guided their management judgment on the basis of these facts," Mr. Fletcher asserted.

Citing the growing importance of research, Mr. Fletcher pointed out that expenditures in this country for research now total $2.9 billion annually, compared with $800 million in 1941.

Know the Cost—Along with research, a foundry needs a good cost system, C. R. Culling, president, Carondelet Foundry Co., St. Louis, said.

"I don't want to imply that a cost system is a cure-all for all of your ills, but it will make you feel secure in the knowledge that you have at least assembled the information that tells you, within reasonable limitations, where you are going and how fast," Mr. Culling suggested.

A Look at Shell Molding—Reporting on some of the technical progress in the foundry industry, T. W. Curry, director of manufacturing research, Lynchburg Found-

ry Co., Lynchburg, Va., said, "Some castings seem to be 'naturals' for shell molding, while others present unforeseen problems, and the latter group may not prove to be suitable for the process.

"We see great possibilities for the foundry industry in shell molding, and we are taking a step in this direction by proceeding to build a shell molding foundry with a capacity of approximately 100 tons of castings a day," Mr. Curry reported.

Steinebach Honored — Highest award of the Gray Iron Founders' Society this year went to Frank G. Steinebach, editor of *Foundry*, a Penton publication.

Heading the society for the next year will be: President, H. J. Trenkamp, Ohio Foundry Co., Cleveland; vice president, C. R. Ker, Dalton Foundries Inc., Warsaw, Ind.; secretary, E. G. Huffschmidt, Western Foundry Co., Portland, Oreg.; and treasurer, W. O. Larson, W. O. Larson Foundry Co., Grafton, O.

Carboloy Opens Magnet Plant

Carboloy Department, General Electric Co., opened its magnet plant at Edmore, Mich., on Oct. 15. Push button controlled operations are spread over nearly two acres of floor space which uses about 1½ miles of conveying systems. Some 2200 types of permanent magnets of an aluminum-nickel-cobalt alloy will be made, both cast and sintered, for uses ranging from military radar and radio to magnetic hardware for kitchen cabinets.

Anticipated capacity of the plant is 2 million pounds per year. Representing a capital expenditure of $5 million, the plant at Edmore is replacing GE magnet facilities at Schenectady, N. Y.

Oldsmobile Wins O.K. on Jet Part

The Air Force has accepted the Oldsmobile-built turbine and compressor units for use in the Buick-built J-65-B-3 jet aircraft engine, General Motors Corp. announces. The turbine and compressor parts are produced in Oldsmobile's Lansing, Mich., plant and shipped to a Buick plant at Willow Springs, Ill., for incorporation into the 13,000-hp engine.

Economy Gets Top Billing

Packaging Institute forum stresses lower unit costs, improved packaging materials

"PUT it in a box, tie it with a ribbon" may suffice for a song line, but it isn't as simple as all that to American industry which spends $9-$10 million yearly for packaging materials and services.

"Without the packaging industry, goods could not be moved from production lines into the channels of distribution," is the way Walter Williams, undersecretary of commerce, summed up the importance of the containers and packaging industry before the 15th Annual Forum of the Packaging Institute in New York last week.

Big Stakes—American industry often spends more for the package than for the products contained in them. Metalworking's stake in packaging is substantial, too. Metal containers cans, steel drums and pails, metal strapping consume nearly 9 per cent of all finished steel produced in the U. S.

Sharpening competition was a major concern of the over-1000 packaging experts gathered in New York last week. Lowered unit costs and improved containers and packaging materials keynoted seminars and panel discussions.

W. M. Barnell, National Cash Register Co., told how his company switched from wood boxes to cartons for shipping registers and accounting machines at a saving of $1.45 per unit in labor and material, plus an average of $0.66 per unit in transportation costs.

A definte need exists in the packaging field for application of engineering principles in compiling complete and adequate specifications, said Clemens Koehler, of Koehler, Odell & Worden. "Facts reveal that less than half of all specifications submitted to suppliers are complete enough in essential detail to allow for correct bids on a uniform basis."

Deserving Place — Carl A. Claus, J. L. Ferguson Co., said, "A packaging engineer . . . must know materials and machines, be a creative artist and have good sales sense. Packaging can be and in many industries is of such major consideration to the profit picture that it should form a distinct and individual division of top mangement."

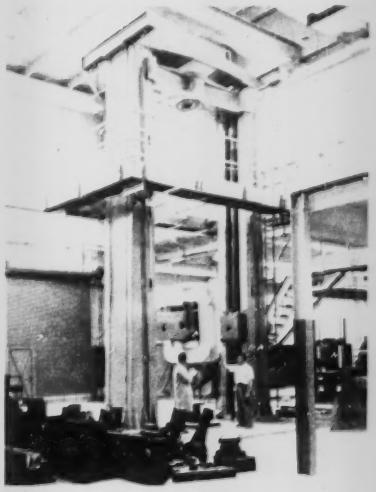
National Malleable Gets New Lab on 85th Birthday

NATIONAL Malleable & Steel Castings Co. unwrapped an attractive package at its 85th birthday celebration this week when it officially opened the doors of its new Technical Center in Cleveland.

Located on a 5.7-acre tract, the concrete, brick and stainless steel structure contains 36,850 sq ft of floor space. Four co-ordinated sections will occupy it. They include:

Physical testing laboratories with a wide range of testing equipment; engineering department, which develops products, engineers' production methods and provides technical service for customers; railway proving ground with test tracks, car pits and National's specially equipped railroad and mine cars; and administrative quarters and meeting rooms.

Research and development work on castings of steel, malleable iron and alloys of the two will be the first concern of the new Technical Center.



BIG TESTER
. . . can apply 1-million-pound load

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Clarence B. Randall's Commission on Foreign Policy is due to make its final report on Mar. 6, 1954. Until then new foreign aid programs are stalled

HOW will we go about substituting foreign trade for foreign aid? That question, one of the major ones with which the present administration must wrestle, has been handed to the Commission on Foreign Policy headed by Clarence B. Randall, Inland Steel Co. chairman. Mr. Randall's group is due to come up with a final report by March 6, 1954. After that both the administration and Congress will go to work on its findings and recommendations.

Saw Off the End—In the meantime launching of new long-range economic assistance programs is hobbled by several factors. First, there is a tendency to wait and see what the Randall commission will recommend. Second, the countries of the free world have made impressive comebacks from the devastation and dislocations of World War II and are less in need of assistance than in the earlier postwar years. Third, much less economic aid is permitted under the appropriations voted by Congress for fiscal 1954. Leading congressmen are talking about sawing off substantially all foreign economic aid as of June 30, 1954.

The dollars to be spent on foreign nonmilitary economic aid in the present fiscal year are less than half of the $1.4 billion spent in fiscal 1953. A peak of $5 billion was spent in fiscal 1950, the first year of the economic aid program.

Biggest share of foreign economic aid appropriations for 1954 goes to Europe, $220 million, mostly for U. S. farm products; Latin America gets $22 million, the Near East and Africa, $34 million, and Asia and the Pacific countries, $62 million, mostly for technical assistance; Arab states, Israel, Iran and overseas territories of Africa get $147 million and India and Pakistan, $75 million, mostly for goods and services; and Palestine gets $44 million mostly for refugee programs, making a total of $604 million in appropriations.

Dollar Improvement — The $604 million does not represent this year's total aid to foreign nations. Of $5.1 billion appropriated for foreign military assistance, well over $2 billion in offshore procurement, cash expenditures by our troops, and maintenance of our foreign military bases will strengthen the dollar position of the countries involved, mostly Europe. Allowing for disbursements by our tourists, by our importers and by our investors, Europe's ability to spend dollars in the United States is greatly improved.

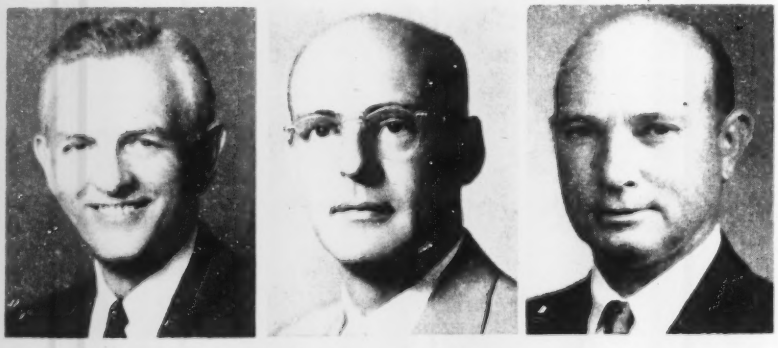
Glenn H. Craig, Foreign Operations Administration executive, told STEEL that the big reduction in this year's foreign aid appropriation will not prevent FOA from helping to relieve any emergency situations that may arise. Assistance in many forms as helping Berlin to solve its unemployment problem, helping the Turks to formulate a program that will attract American investors, supplying grain to famine-ridden Pakistan will continue to be given whenever the need arises.

The Setup—The Randall commission has set up quarters at 330 C street S. W., Washington 25. It is preparing to canvass national organizations in the United States as a first move in determining the nature of the real foreign trade interests of this country.

FEPC Warms Up Again . . .

Prediction by Sen. Everett Dirksen (Rep., Ill.) that the Republicans would carry out their campaign pledges by seeking congressional approval of a federal fair employment practices bill in 1954 to apply to private employment represents the thinking of an increasing number of congressmen. The present plan calls for hearings early in the next session by the Senate Labor Committee on the Ives FEPC bill. Whether such legislation will pass, however, is by no means assured. Southerners continue violently opposed to the bill and will undoubtedly resort again to the filibuster if it comes up for Senate debate.

President Eisenhower, by the assignment he gave his new Government Contract Compliance Committee, proved that he wants to end the present widespread noncompliance among government contractors.



New Line Up for BDSA

Charles F. Honeywell, (left), has been named administrator of the Business & Defense Services Administration by Commerce Secretary Sinclair Weeks. Mr. Honeywell had been Secretary Weeks' senior special assistant since Jan. 20, 1953. In another replacement, Perrin G. March, (center), president of Cincinnati Shaper Co., Cincinnati, is one of three assistant administrators in place of Samuel N. Comly, (right), Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.

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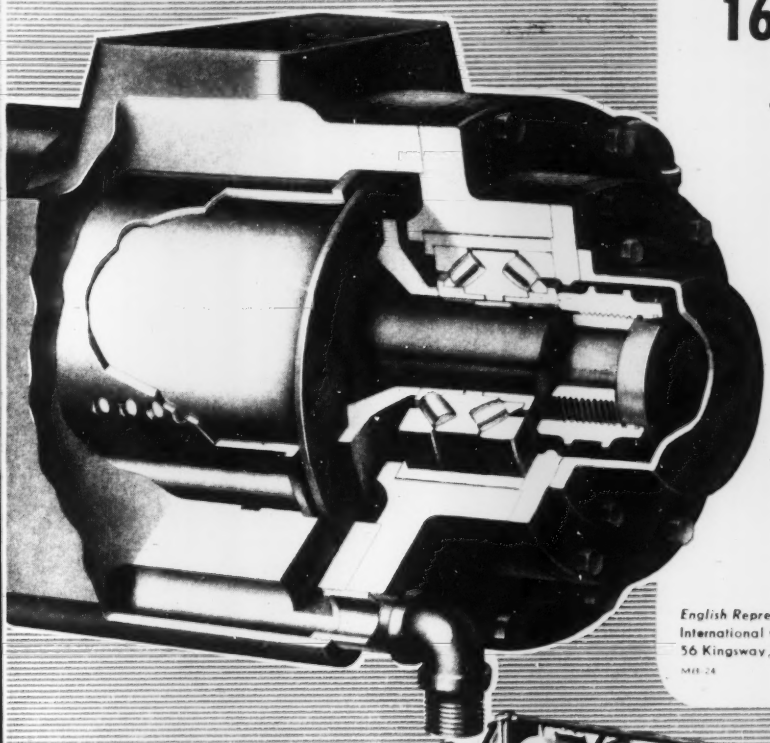

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48" 72 Morgoil Bearings operating in 25", and 52x90, 4 high hot strip mill at Granite City Steel Co., Granite City, Illinois.

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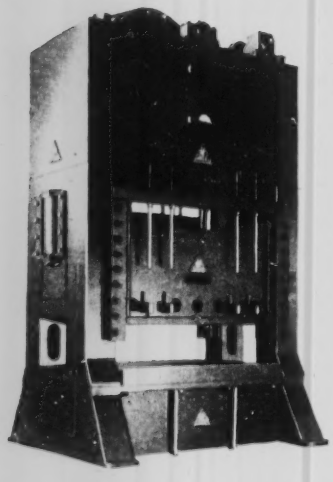
Do Caterpillars Know?



The coat coloring of the "woolly bear" predicts the mildness or severity of the coming winter, folklore experts believe. But this furry caterpillar wisely spends his winter in a snug cocoon, cozily unconcerned about folks who believe his prediction.

Time-worn ideas like this one often cling in spite of the cold analysis of modern science. Adherence to traditional methods continues to hamper Industry. Failure to use modern press equipment in product manufacture because certain parts have always been cast or cut from solid is a case in point.

Why not take a closer look at your manufacturing methods now? In addition to greater production economy, modern press methods often bring attendant benefits like faster assembly and improved product appearance. We'd like to show you how this can be done. Call on Clearing Machine Corporation.

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U. S. Tariff: Lower than Most . . .

American Tariff League's study of the free world's tariffs shows the U. S. among the low half-dozen. The study cites need for more complete and uniform foreign trade reporting

AMERICAN TARIFFS are relatively low when compared with those of other countries of the world. Further, the U. S. has reduced its tariffs more percentagewise from 1937 to 1951 than most other countries.

Those are the conclusions of a recent study made by the American Tariff League Inc.

Fly in the Pie—Unfortunately, the study points out, many adjustments might be needed in the precise ranking of the various nations if foreign trade statistics were published more completely and uniformly than they are today. But the general conclusions would still hold, ATL maintains. The U. S. is far from high man on the tariff totem pole.

Basis for Study—The ATL study sought to find the actual average tariff level of several countries. This was done by taking total imports and total duties collected and reported on all goods and dividing duties into imports to get a ratio, expressed as a percentage. Thus, in 1952 U. S. imports totaled $10.7 billion; customs receipts were $575 million. That equals a ratio of 5.3 per cent of duty collected on each dollar of imports.

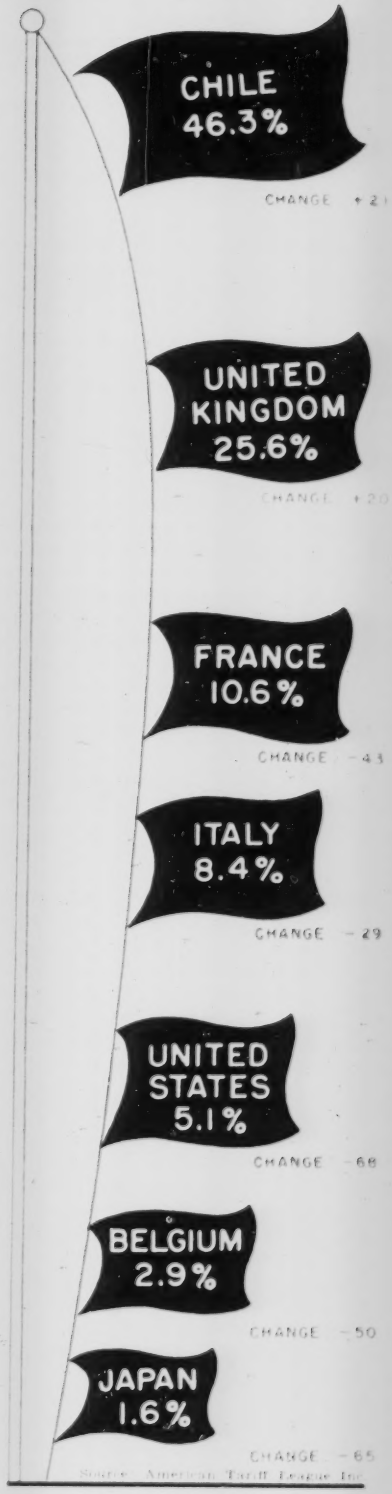
On that basis for the year 1951, partial results of the survey shown at right resulted. The remaining countries studied ranked: Pakistan, 36.9; Haiti, 35.2; Egypt, 29.6; Ceylon, 25.7; El Salvador, 25.0; Guatemala, 22.3; Mexico, 20.6; Iran, 19.9; Iraq, 18.4; Thailand, 18.2; Venezuela, 17.8; New Zealand, 17.5; Greece, 16.3; Costa Rica, 15.2; Colombia, 13.8; Ireland, 13.2; Panama, 13.2; Turkey, 12.3; Portugal, 9.8; Australia, 9.6; Peru, 8.5; Switzerland, 8.1; Brazil, 7.5; Canada, 7.5; Honduras, 6.3; West Germany, 5.8; Union of South Africa, 5.6; **U. S., 5.1**; Netherlands, 4.6; Norway, 4.2; Sweden, 3.9; Argentina, 3.2; Denmark, 1.7.

Direction Down—The American Tariff League also compared the rate of change in the average tariff level between 1937 and 1951. The average for the 36 countries which decreased was 49 per cent. The U. S. tariff declined from 15.8 per cent to 5.1 per cent for a decrease of 68 per cent. (Other rates of change are shown in chart at right.)

Several reservations were pointed out by ATL which might change the standings of some of the countries listed, but which would not alter the American position significantly. First, imports for each country were taken from publications of the International Monetary Fund which are listed in c.i.f. values (including costs, insurance, and freight; excluding duty paid). Thus U. S. totals differ slightly from U. S. official figures. This was done to put imports of the various countries on a uniform basis.

Unknowns—Then, too, free as well as dutiable items are included in import totals since the U. S. is the only country known to divide its reports into those categories. No exceptions were made for special items which may carry unusually large import duties (Britain's import duty on tobacco may run as high as two-thirds of total duties imposed on all imports in any one year). Preferential rates were not taken into consideration (if Britain's over-all average is 25.6 per cent, the preferred rate given to dominion countries would make the world rate that much higher). Finally, special taxes, not reported as duty on imports, were not included in the study. But these and other forms of restrictions, such as quotas, embargoes and bilateral agreements, exist in many countries of the world.

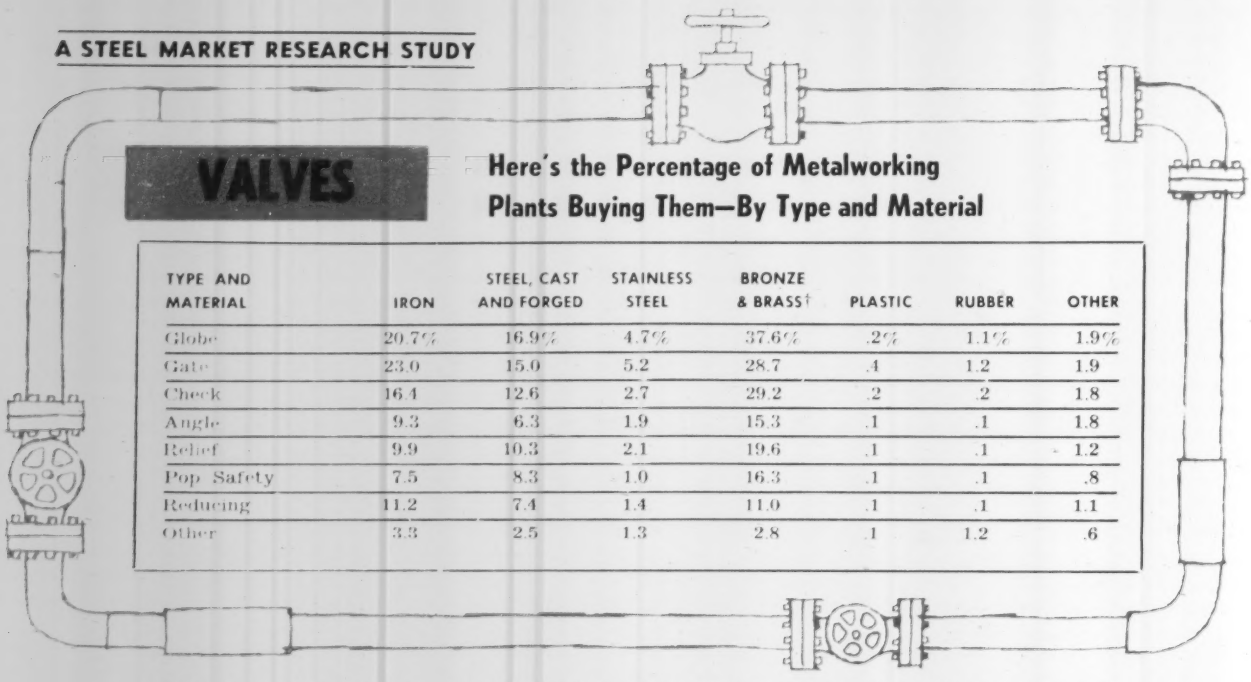
The ATL study is not infallible, but it points up one important point: Any U. S. action on tariffs should be based not only on consideration of domestic industry but on the tariff rates of other countries in order to open a two-way street in foreign trade.



How Tariffs Compare

Ratio of duties collected to total value of imports for 1951. Percentage change indicates increase or decrease in that ratio between 1937 and 1951

A STEEL MARKET RESEARCH STUDY



VALVES

Here's the Percentage of Metalworking Plants Buying Them—By Type and Material

TYPE AND MATERIAL	IRON	STEEL, CAST AND FORGED	STAINLESS STEEL	BRONZE & BRASS†	PLASTIC	RUBBER	OTHER
Globe	20.7%	16.9%	4.7%	37.6%	.2%	1.1%	1.9%
Gate	23.0	15.0	5.2	28.7	.4	1.2	1.9
Check	16.4	12.6	2.7	29.2	.2	.2	1.8
Angle	9.3	6.3	1.9	15.3	.1	.1	1.8
Relief	9.9	10.3	2.1	19.6	.1	.1	1.2
Pop Safety	7.5	8.3	1.0	16.3	.1	.1	.8
Reducing	11.2	7.4	1.4	11.0	.1	.1	1.1
Other	3.3	2.5	1.3	2.8	.1	1.2	.6

NOTE: These percentages do not add up to 100% because many plants buy several types of valves made out of several materials.

†Brass and bronze are combined because it became apparent in the tabulations that respondents thought of the terms "bronze" and "brass" as being the same.

Flow in the valve industry continues at a speed only slightly lower than in '52. Supply in some lines still lags demand and prospects for next year are good

BIGGEST FIELD in the valve industry is in the manufacture and sale of globe, gate and check valves made of brass, bronze, iron and steel, STEEL'S latest market research study shows.

Doing a dollar-volume business estimated at better than $525 million in 1953, the industry is operating on a high plateau only slightly below that of 1952, industry officials report. With the order books still well filled and the government listing valves among the key components still in short supply, the prospects for the industry in 1954 are good.

The Aim—STEEL'S survey was designed to determine which valves are most widely used in the metalworking industry. The accompanying table was compiled from answers to questionnaires sent out to 3000 metalworking plants.

Main use of valves, according to the respondents, is for the control of flow and pressure of water, air, steam and oil. Nearly 45 per cent of the plants purchase valves for use in their plants to control flow, 38 per cent to control pressures, 20 per cent temperature and over 10.5 per cent to control level. Approximately 44.5 per cent of the plants buy valves to control water, 43.4 per cent to control air, 30.6 per cent steam, 30.2 per cent oil, 15.2 per cent other gases and 8.4 per cent other liquids.

Wide Market — Nearly 23 per cent of the plants responding to the survey reported that they purchased valves for installation on equipment they manufacture for sale. Very few industries in the nation do not have use for some type of valve; large-volume users are the petroleum, gas, chemical and electric utility industries.

Expenditures by individual plants were broken down into six rough categories. In plants purchasing valves to install on items they manufacture: 15.1 per cent in 1952 spent less than $1000; 43.7 per cent spent between $1000 and $10,000, 5.9 per cent $10,000 to $20,000, 12.6 per cent $20,000 to $50,000, 9.2 per cent $50,000 to $100,000 and 13.5 per cent spent over $100,000.

Plant Use—In plants purchasing valves for their own plant use: 54.9 per cent spent less than $1000 in 1952, 35.6 per cent spent $1000 to $10,000, 5.5 per cent spent $10,000 to $20,000, 2.9 per cent spent $20,000 to $50,000 and 1.1 per cent spent over $50,000.

As valve producers sharpen their competitive weapons for the coming year, they should direct their promotional efforts to all key personnel, particularly the purchasing departments. STEEL'S survey shows that 66 per cent of the plants purchasing valves for plant use and 72 per cent of the plants installing valves on manufactured products have two or more persons influencing valve purchases.

Small Firms Fared Well

Small businesses fared better with regard to Navy prime contracts during the three years of the Korean conflict than they did during the last three years of World War II. During the former period they were awarded $4.9 billion in such orders compared with only $3 billion during 1942-45.

For the Single Standard

At AIEE meeting, Blackall hits futility of dual electrical standards for machine tools

"THERE IS no more excuse in this country for two general electrical standards, which are intended to meet all conditions, than there is for a conventional geared transmission alongside a fluid job in a modern automobile."

Thus, in his address to the American Institute of Electrical Engineers' conference on machine tools in Cleveland last week, Frederick S. Blackall Jr. called for elimination of the dual-standard problem in machine tool electrification.

Mr. Blackall, president and treasurer, Taft-Peirce Mfg. Co., Woonsocket, R. I., and president, American Society of Mechanical Engineers, cites the need for agreement between machine tool users and machine tool builders on the use of the Joint Industry Conference and National Machine Tool Builders' Association codes for the machine tool industry.

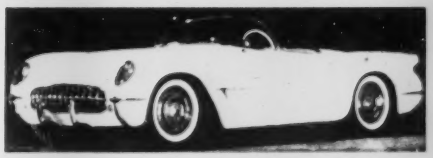
Room for Exception—Mr. Blackall feels, "There is no reason why optional standards could not be set up to *pari passu* with general standards to take care of special cases or particular industries, but it is most inequitable and uneconomic to tailor the nature and content of standards to the needs of any single segment of business . . ."

Mr. Blackall also points out that with today's drive for more automation, with its inherent complexity, there also should be a drive for simplification of the standard machine tool for performance of the ordinary production of industry—especially small lot production.

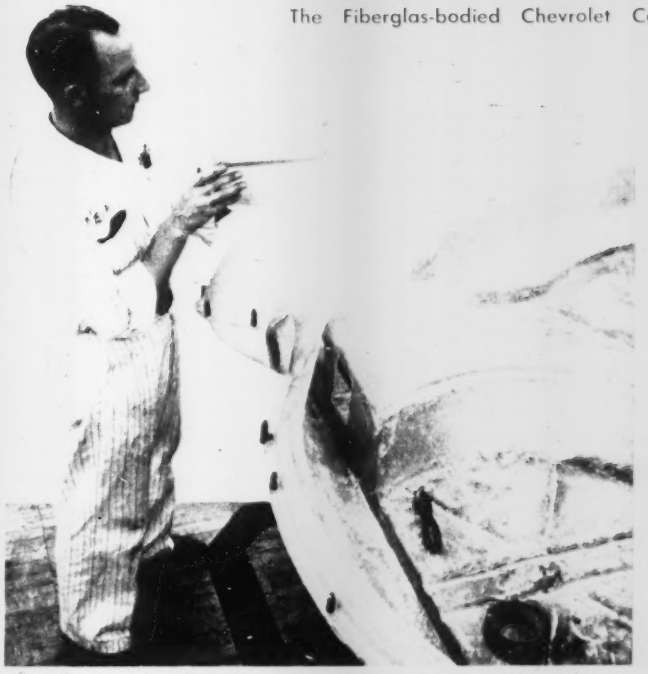
The conference, sponsored by the AIEE subcommittee on machine tools, drew more than 500 electrical and mechanical engineers of the machine tool builders, electrical manufacturers and large users of machine tools. Eleven papers on machine tool electrification were presented.

General chairman of the machine tool subcommittee is R. H. Clark, administrative engineer, Warner & Swasey Co., Cleveland.

Autobody of Tomorrow?



The Fiberglas-bodied Chevrolet Corvette



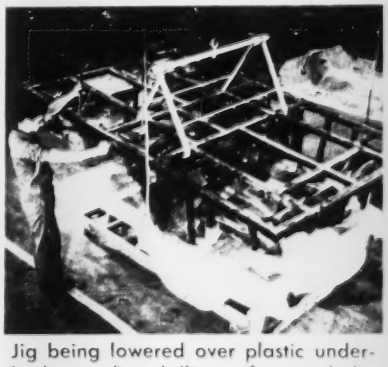
Adhesives bond some parts; others require riveting also

REVOLUTION or flash-in-the-pan? To find out if tomorrow's autos will really have plastic bodies as some prophets proclaim, a lot of eyes are turning to the Chevrolet Corvette assembly line at Flint, Mich.

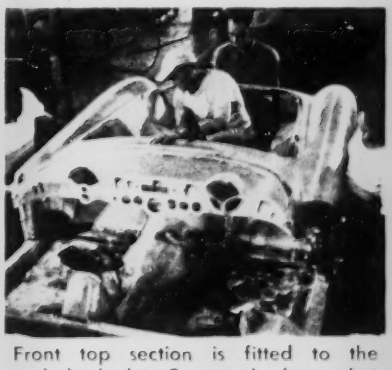
There Chevrolet engineers are suffering the growing pains of mass production in Fiberglas from which 250 Corvette bodies will be laminated this year. From what they've learned they expect production of 1000 plastic bodies a month from a new line soon to be set up in St. Louis.

Great resistance to shock, lighter weight than steel for equal strength, low noise level and no rust these are qualities of plastic bodies which appeal to enough people with padded checkbooks to make Chevrolet take the Corvette gamble.

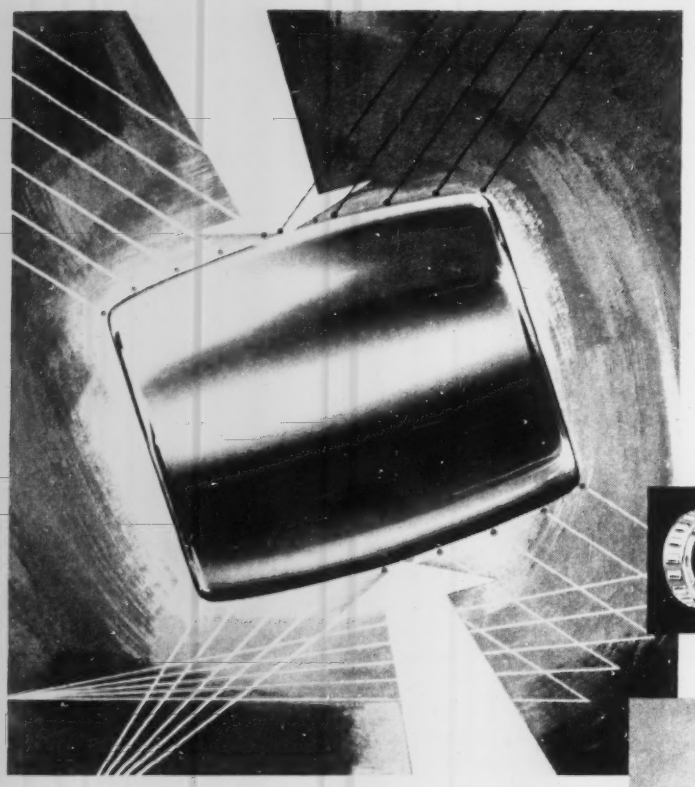
But can plastic bodies compete in cost with steel? The answer may come from this experiment and eyes are watching.

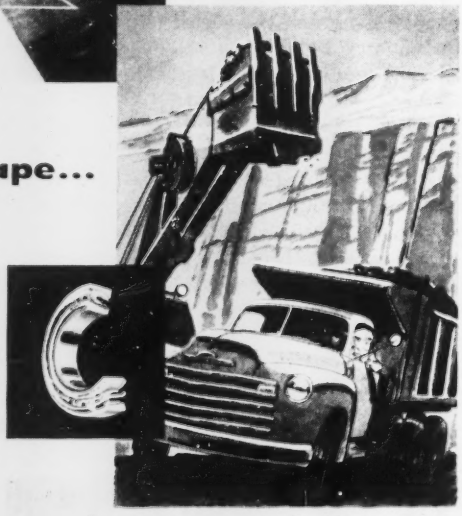


Jig being lowered over plastic underbody guides drilling of rivet holes



Front top section is fitted to the underbody, key Corvette body member



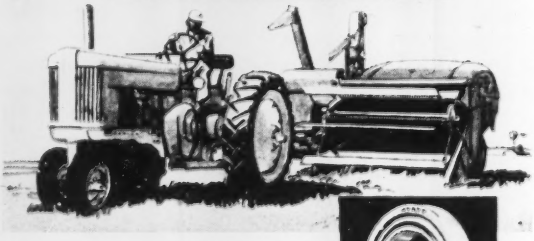


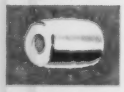
A new era in bearings is taking shape...

NEW HYATT BARREL BEARING

now available in volume!

Industrial designers and engineers seldom make changes in bearing specifications. But when they discover something *really new*—like Hyatt's BARREL BEARING—out come the blueprints! *And this time they know they've got something!* Hyatt's new Barrel Bearing combines dual-purpose design with self-aligning action. It takes load from any direction and operates at full efficiency under conditions of misalignment! And, because barrel-shaped rollers provide high load capacity with low friction, this unique bearing is ideal for a wide range of applications. Best of all, the *cost* is far lower than you would expect! Let us show you how the Barrel Bearing can improve *your* product!





HYATT ROLLER BEARINGS

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION HARRISON, N. J.

By FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom

By complex teamwork, automakers are improving the interrelationship between product planning and production—and thereby cutting costs

DETROIT

DID YOU KNOW that the shape of your car's chassis was determined in part by how well it would nest into a freight car?

While the cornering crew sobs softly, it must be pointed out that nesting in a freight car is rarely the primary consideration in chassis design. On the other hand, with assembly plants scattered all over the country being supplied with millions of chassis annually, the saving in a few more chassis per freight car can be substantial. So if a design which nests better is equal in other respects to alternative designs it will get the nod.

Interrelation — This little example of how the automakers nest their feathers is an introduction to a subject of growing importance in cutting costs as competition sharpens the interrelationship of product planning and production. Perhaps more than any other industry, the automakers realize that their complex and modish product to be an economic success must be competitive in production cost as well as sales appeal.

Product-planning an automobile starts with research to indicate what the buying public will want in a car three to five years hence. Based on this research, objectives of the car design are set up in terms of weight, performance, height, width, length, etc. But coupled with these physical objectives of the car is another objective which ties the engineers up tighter than the yarn in a chorus girl's sweater—how much the car is going to cost. Inevitably the car is going to be finer and cheaper which are mighty nice objectives and indicate that research is doing its job.

Different—Now at this point in many organizations the engineers smilingly take the objectives from the research men, design the product and tell the production men to build it within the budget. Not so, it is said, with the automakers. These enlightened individuals set out to design a unit that can be built within the budget right from the word "go."

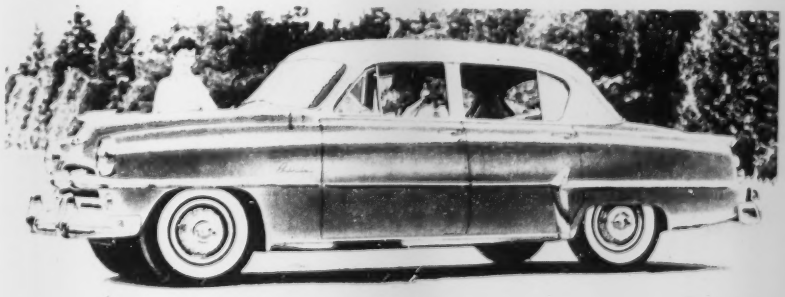
To accomplish this objective product designers work as a team with the production men creating first what is known as a basic proposal. This model incorporates the features outlined in the objectives and, with management approval, serves as a starting point for development work that will lead to the ultimate design. Needless to say, there is plenty of development work to be done. An automobile contains about 15,000 parts. If only a tenth of a cent can be saved on each part that will amount to $15 per car and $15 million if a million cars are produced.

Teamwork Required—The amazing thing about this job of engineering 15,000 parts lies in the fact that though the parts are developed somewhat independently they must function as a unit. Thus if an engineer concludes that he can save two cents per car by elimination of a fender bolt, repositioning of the remaining bolts may be required. In the repositioning, perhaps one of the bolts will fall in a spot where it cannot be tightened due to interference of a brace which someone else moved to save money.

To eliminate such a possibility, models are continually being built as changes are suggested. Hypothetical body sections are carefully scribed on clay models to be sure body lines can be executed in metal. A particularly tough-looking point on the body like the juncture of the front corner post and roof will frequently be made in plastic of the appropriate thickness and contour. Can it be clamped? Can it be reached with a welding gun? These are other questions the models answer.

Questions—Or perhaps a different material or fabrication technique is to be used. Perhaps a crankshaft of a certain slightly different design would lend itself ideally to a shell molding process. Can the new crankshaft be worked into the engine without undue compromise? Or even going one step farther, suppose the company builds both cars and trucks. Will this same crankshaft prove suitable for installation in both types of engines with little or no modification?

A good example is the Lincoln engine which is also used in some Ford trucks. Basic differences in



Plymouth Joins New Model Parade

Although reminiscent of 1953 models, Plymouth's line for 1954, introduced Oct. 15, shows some interesting changes. Models are longer by three and five-eighths inches and feature the woman's touch in interior color and fabric styling. The dash has a no-glare, leather-like finish. Power steering, Hy-drive transmission (a no-shift, torque converter type) and overdrive are available

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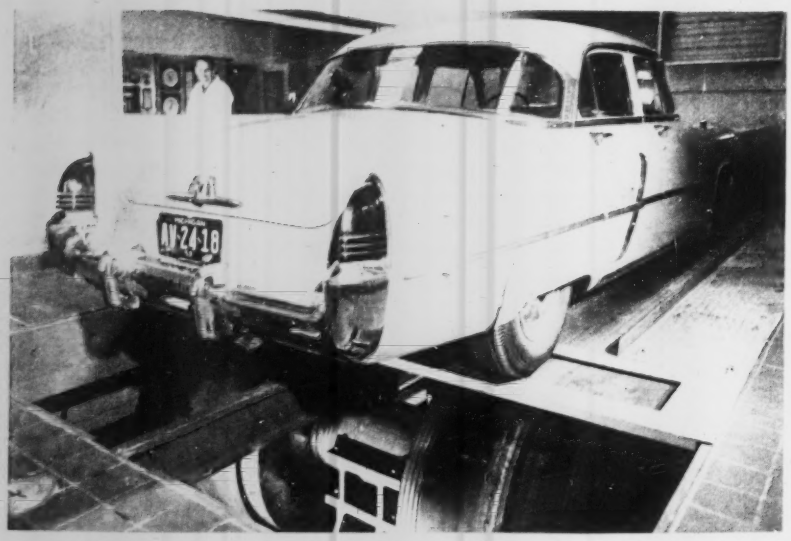


Road Tests Without a Road

Electronically controlled dynamometers and their associated equipment which simulate many road conditions, such as inertia, wind resistance and road grades, make it possible to move some of Ford Motor Co.'s road tests into its Research & Development Center, Dearborn, Mich. Lincoln above is undergoing chassis test

the engine include modification of the carburetor flange and choke pad in the manifold and the addition of valve seat inserts in the truck engine cylinder head. These differences were anticipated long before the engine went into production on the indication that savings could be effected with no sacrifice in desired performance.

Compromise—If a unit is to be built on existing facilities, compromises in design and/or in the facilities will be necessary. The extent of such changes will be a big factor in how much the part will ultimately cost. Many a fine-sounding idea has been dropped because implementing it would have required the addition of a seventh spindle to a six-spindle machine.

But the production men are also suggesting as well as vetoing. Analysis may reveal that the limiting operation on a multistation machine is machining a certain surface on a casting while the other stations have finished cutting. Modification of the casting to lessen the amount of machining required or performing the operation in two passes on successive machines may be indicated.

Ingenuity—Or perhaps the same result may be obtained by a different process. An example is the lubrication groove in the Lincoln ball and socket front suspension. Machining the three spiral grooves produced 35 parts an hour, while rolling the grooves hiked output to 85 parts an hour.

It all adds up to a tremendous job of anticipating production problems while the basic design is still in the formative stages. The automakers have found that the amount of intercommunication and co-operation required pays off. And perhaps the fact that your car's chassis nests in a freight car may only mean a cent or two in the cost of your car, but multiplying millions of cars by millions of such ideas is the secret of the automakers' success.

Plymouth: Off Color Story

The 1954 Plymouths are going to be an interesting line of cars to watch. Though minor exterior trim changes for identification have been made in the line, the real Plymouth pitch in 1954 is going to be color matched, keyed and dazzling.

This raises the question of just how effective color can be in selling automobiles. If it's true that women are color conscious and are the key factor in clinching most new car sales, Plymouth could rival Kinsey in notoriety among the fair sex. The plethora of other variables makes this an almost scientific setup to observe the impact of color on the buying public.

Willys in Holland

A contract providing for the assembly at Rotterdam of the entire line of Willys passenger and commercial vehicles is announced by Hickman Price Jr., president of Willys-Overland Export Corp. Nederlandsche Kaiser-Frazer Fabrieken N. V. will do the building and the firm's facilities are being expanded to accommodate the new production.

Exhaust Notes

Ford passenger car sales in the third quarter were the highest since 1929 and September sales were the highest for that month since 1924. Oldsmobile reports its sales are up 75 per cent over 1952 efforts.

Ignoring the fact that auto sales are seasonal, the CIO is shaking its finger at Chrysler Corp. Citing the the June "I told you so" of Walter Reuther, the autoworker union indicates that Chrysler would do better to underproduce during the first half of the year to sustain full production during the second half. Although it's so illogical it's laughable, you're hearing the first guns in the battle for the guaranteed annual wage.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,453	570,464
May	685,390	542,559
June	713,206	542,479
July	757,595	226,134
August	641,242	322,755
September	605,343	595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
Sept. 12	122,863	137,295
Sept. 19	146,912	147,748
Sept. 26	140,953	141,228
Oct. 3	142,824	143,234
Oct. 10	146,479	138,035
Oct. 17	148,000*	138,088

Source: Ward's Automotive Reports
*Estimated by STEEL

LOW UPKEEP FOR HIGH LIFTS

Taking fast schedules, heavy loads, long hours in stride . . . New Departure ball bearings are used in 22 makes of lift trucks, contributing substantially to the rugged, maintenance-free characteristics of this equipment.

Minutes are money when meeting tight production and shipping schedules. That's why materials handling equipment must be designed to hold maintenance time and costs to the minimum. And that's why so many designers of lift trucks specify New Departure ball bearings. Many are ND-Seals which require no upkeep. Vital lubricant is sealed in for friction-free, peak efficiency performance . . . dirt and dust are kept out.

Every New Departure ball bearing is backed by the industry's most complete manufacturing, research and engineering facilities . . . all of which stand ready to serve the designer and engineer.

NOTHING ROLLS LIKE A BALL

NEW DEPARTURE
BALL BEARINGS

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT
Also Makers of the Famous New Departure Coaster Brake

How to get maximum tube life per dollar: Ask the experts!

This month's report is on:

SICROMO 7

Suggested as a substitute for steels of the 5.0 per cent chromium type for applications which require increased resistance to corrosion by hot petroleum products.

ONE OF 24 TIMKEN HIGH TEMPERATURE STEELS

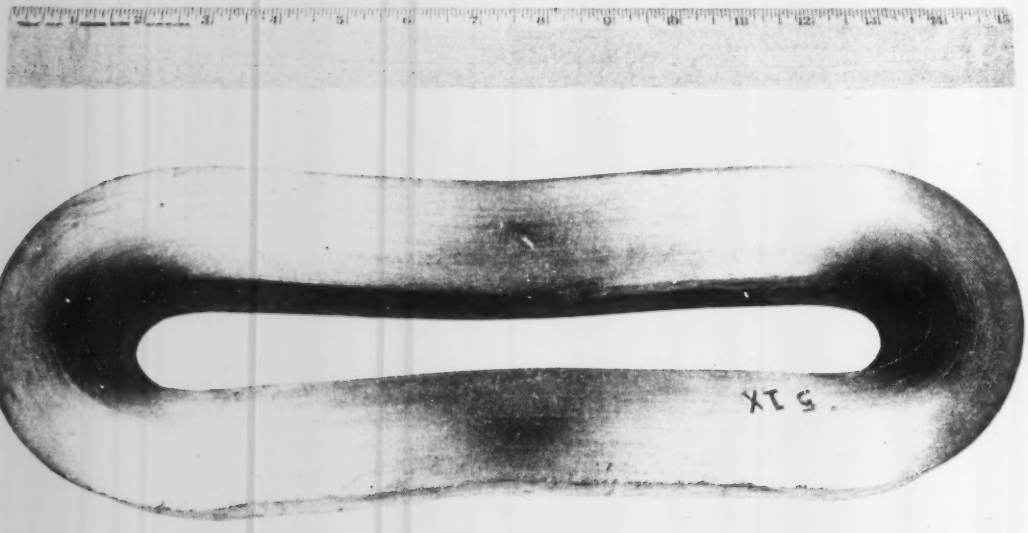
Carbon	Sicromo 2	Sicromo 5S	18-8 Ti
Carbon-Mo.	Sicromo 2½	Sicromo 5MS	16-13-3
DM-2	2½% Cr.-1% Mo.	Sicromo 7	25-20*
Silmo	Sicromo 3	Sicromo 9M	25-12*
DM	4-6% Cr.-Mo.	18-8 Stainless	35-15**
2% Cr.-Mo.	4-6% Cr.-Mo.-Ti.	18-8 Cb	16-25-6**

** Available as seamless tubing on an experimental basis only.*
***Not available as seamless tubing.*

YOUR temperature, pressure, corrosion and oxidation problems may be solved by several analyses of high temperature steels. But from the standpoint of maximum tube life per dollar—the best life/cost ratio—there's only *one* analysis that's best for you.

To get that one analysis, go to metallurgists of The Timken Roller Bearing Company. They're recognized authorities on high temperature steels—with more than 20 years of steel research and experience behind them. They'll help you choose the one tube steel analysis that's best for your application from the 24 different analyses at their disposal. And no matter which one you choose, you can be assured of uniform quality because the Timken Company rigidly controls quality from melt shop through final tube inspection.

Let our "RSQ"—Research, Supply, Quality—solve your tube problems. *Ask the experts!* The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

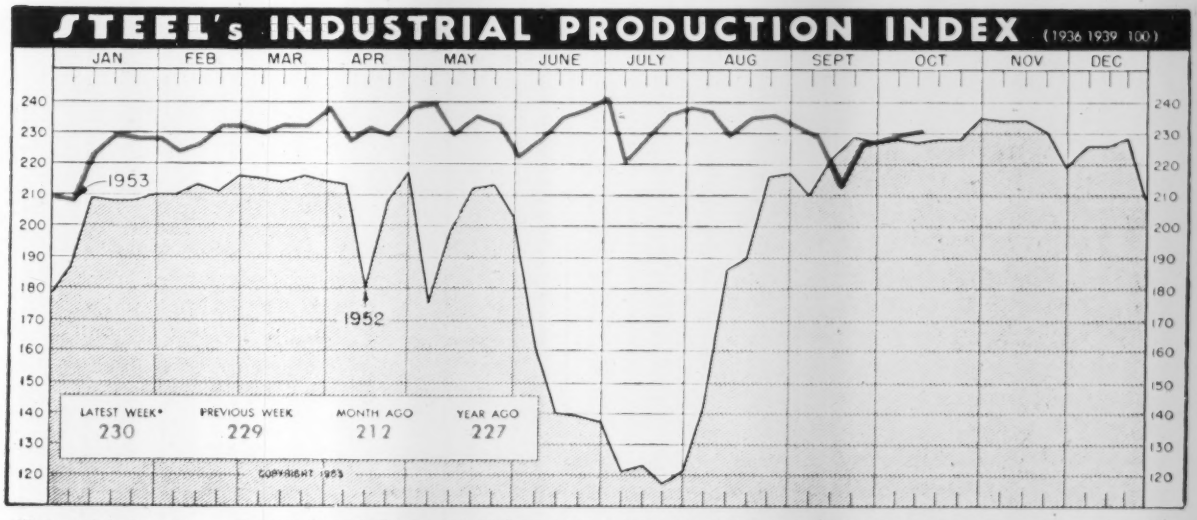


Flattened test of 10¾" O.D. by 1.580" wall of 18-8 Cb showing the excellent ductility of large, heavy-wall Timken seamless tubing.

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

The Business Trend


STEEL's INDUSTRIAL PRODUCTION INDEX (1936 1939 100)
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
240 230 220 210 200 190 180 170 160 150 140 130 120
1953
1952
LATEST WEEK* 230
PREVIOUS WEEK 229
MONTH AGO 212
YEAR AGO 227
COPYRIGHT 1953

*Week ended Oct. 10 Based upon and weighted as follows: Steelworks Operations 35%, Electric Power Output 23%, Freight Car Loadings 22%, and Automotive Assemblies (Wards' Reports) 20%

Sales continue at same high level as earlier in the year. Inventory is being watched closely. Falling commodity prices necessitate increased sales effort

INDUSTRIAL PRODUCTION continues at a relatively high level. During the week ended Oct. 10, STEEL's industrial production index registered a preliminary 230 per cent of the 1936-1939 average.

This outturn was one point above the preceding week and a continuation of the slow but steady rise that has taken place since Labor Day. Output, though off 4 per cent from the year's high, is running about equal to the first quarter average.

The present production dip supposedly represents a return of business to more normal peacetime conditions. It has been anticipated by most businessmen for many months; some looked for it several years ago.

Paramount question is whether or not the reduction in production is a limited adjustment to a temporary change in the world political climate or something deeper. Bearing in mind that in a free economy such as ours, supply and demand are often out of balance, let's look at some other economic indicators.

Consumer Purchases Are High...

Retail sales in August continued at the same high rate as earlier in the year. Consumer purchases during the month were 6 per cent above August, 1952. Cumulative sales for the first eight months of the year were also 6 per cent more than in the same period a year ago. From January through August, $111.4 billion changed hands, the Bureau of the Census says.

Wholesalers Optimistic . . .

Sales by wholesalers during August look even more promising. Estimated at $8.8 billion by the Office of Business Economics, these sales even after adjustment for seasonal variation were 2 per cent above the preceding month. Sales of both durable and nondurable goods were up slightly on a seasonally adjusted basis from July. Among the durable goods, seasonally adjusted, machinery and metals were up 4 per cent; hardware, 3 per cent and automobiles and building materials, 2 per cent.

Inventory Rise Slowed . . .

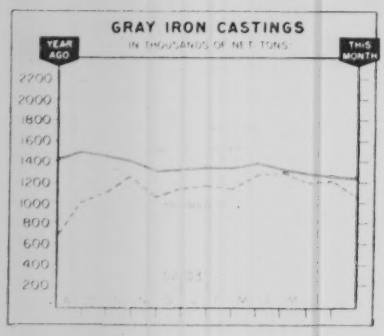
Inventories continued their rise during August but at a rate considerably less than in the earlier part of the year. Total inventories at the end of August were estimated at $77.8 billion by the Office of Business Economics. After adjustment for seasonal variation the book value of inventories increased $450 million from July to August, compared with an average gain during the second quarter of about $750 million per month. The physical volume of gain was even less, since higher replacement costs accounted for one-third of the increased book value.

Inventory X-rayed . . .

A breakdown of business inventories reveals that retail stocks amounted to $21.8 billion. Wholesale stocks were $10.3 billion and manufacturers', $45.8 billion. More than 80 per cent of the total adjusted inventory gain was in stocks of manufacturers. Retail inventories were up slightly from July and wholesalers' stocks were unchanged. Almost two-thirds of the gain at the manufacturing level was in stocks of durable goods. It would appear then, that durable goods manufacturers are both hopeful of better than usual year end sales and that they are postponing production adjustments.

Future Problem . . .

The effect of the decline in prices of raw commodities these prices

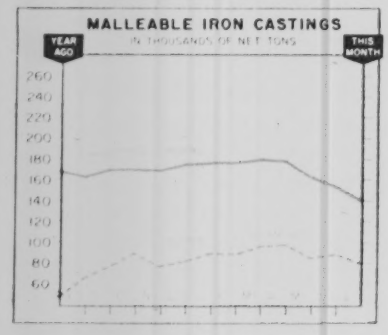


Gray Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan.	1,162	1,199	1,333	1,801
Feb.	1,136	1,155	1,332	1,766
Mar.	1,264	1,172	1,376	1,711
Apr.	1,277	1,205	1,306	1,614
May	1,186	1,101	1,272	1,459
June	1,196	835	1,216	1,445
July	1,066	636	1,233	1,419
Aug.		1,092		1,513
Sept.		1,119		1,451
Oct.		1,233		1,392
Nov.		1,061		1,369
Dec.		1,142		1,316
Total		13,669		

*For sale, U. S. Bureau of the Census

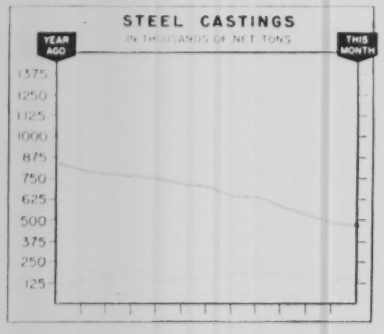


Malleable Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan.	87.2	87.0	174.8	203.0
Feb.	86.5	82.9	175.1	193.1
Mar.	94.5	81.0	177.8	196.9
Apr.	95.9	89.3	174.5	198.2
May	82.1	81.8	160.4	180.4
June	86.5	74.4	151.0	173.4
July	77.1	45.3	137.3	166.6
Aug.		63.7		162.8
Sept.		75.9		168.4
Oct.		88.1		168.6
Nov.		76.1		167.8
Dec.		80.6		173.5
Total		926.1		

*For sale, U. S. Bureau of the Census

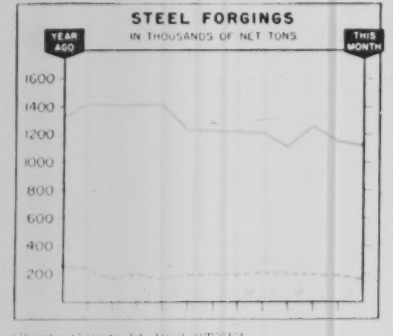


Steel Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan.	167.2	163.7	706.5	869.3
Feb.	175.7	174.6	644.3	846.9
Mar.	182.2	173.7	634.6	857.1
Apr.	179.6	175.1	573.6	843.0
May	165.6	173.6	525.0	804.7
June	164.7	141.6	475.8	846.5
July	139.6	119.0	467.9	855.0
Aug.		150.2		809.4
Sept.		158.4		781.9
Oct.		165.2		772.9
Nov.		148.3		751.7
Dec.		161.7		719.2
Total		1,925.1		

*For sale, U. S. Bureau of the Census



Steel Forgings*

Thousands of Net Tons

	Shipments		Unfilled Orders	
	1953	1952	1953	1952
Jan.	184	271	1,207	1,472
Feb.	184	277	1,199	1,464
Mar.	200	266	1,197	1,360
Apr.	196	277	1,082	1,349
May	191	263	1,239	1,319
June	185	224	1,135	1,248
July	159	132	1,101	1,290
Aug.		121		1,399
Sept.		150		1,392
Oct.		178		1,393
Nov.		156		1,399
Dec.		181		1,377

U. S. Bureau of the Census. *Data based on reports from commercial and captive forge plants with monthly shipments of 50 tons or more

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Oct. 5	Gears	Sept. 21	Ranges, Elec.	Oct. 5
Durable Goods	Oct. 12	Indus. Production	Sept. 14	Ranges, Gas	Oct. 12
Employ., Metalwk.	Sept. 28	Ironers	Sept. 21	Refrigerators	Oct. 5
Employ., Steel	Aug. 31	Machine Tools	Oct. 5	Steel Shipments	Oct. 12
Fab. Struc. Steel	Sept. 21	Prices, Consumer	Sept. 28	Vacuum Cleaners	Oct. 12
Foundry Equip.	Sept. 14	Prices, Wholesale	Sept. 28	Wages, Metalwk.	Sept. 28
Freight Cars	Aug. 24	Pumps	Aug. 24	Washers	Sept. 21
Furnaces, Indus.	Sept. 14	Radio, TV	Aug. 31	Water Heaters	Sept. 14

have returned to the pre-Korea level of early 1950—may benefit manufacturers. It depends on whether or not their price reductions reach the consumer quickly and on a resultant expansion of consumer purchases. If these circumstances occur, then gross income will not be reduced. And net income will be increased due to the anticipated expiration of the excess profits tax. This result is highly probable, since it does not include an increase in consumer spending, but rather more people buying more goods at reduced prices. And that is why selling will be so important in the near future.

Future Preparations . . .

Corporations, during the second quarter of 1953, continued to get ready for a hard-to-predict future. Their hefty second-quarter sales increased total working capital to $88.2 billion. The $1.5 billion gain over the first quarter was largely due to a reduction in current liabilities, according to the Securities & Exchange Commission. The composition of current assets was changed considerably. Most striking change was in holdings of cash, which rose $1.5 billion, almost entirely due to a reduction in holdings of government securities.

Please Remit . . .

While corporations are increasing their working capital, they and other business organizations are not discounting or paying their trade invoices as promptly as before. Increased competition is one of the major reasons; expanded inventories, another. Most notable declines have occurred in the retail and manufacturing groups. Although the general decline is slight, 83.3 per cent paid or discounted promptly in the retail field in August, 1952. In August of this year only 80.8 per cent could do the same thing. In the manufacturing area, it was 88.2 per cent in August, 1952; in the same month this year 87.4 per cent of manufacturers were as prompt, the Credit Research Foundation says.

Factory Hiring Off . . .

Another falling indicator, with implications not as immediately

BAROMETERS OF BUSINESS

	LATEST PERIOD	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	95.0	95.0	104.5
Electric Power Distributed (million kwhr)	8,307	8,414	7,698
Bitum. Coal Output (daily av.—1000 tons)	1,538	1,603	1,518
Petroleum Production (daily av.—1000 bbl)	6,430[1]	6,443	6,517
Construction Volume (ENR—millions)	$170.0	$382.6	$341.6
Automobile, Truck Output (Ward's—units)	146,479	142,824	138,035
TRADE			
Freight Car Loadings (unit—1000 cars)	808[1]	813	843
Business Failures (Dun & Bradstreet, no.)	185[1]	189	147
Currency in Circulation (millions)[3]	$30,374	$30,271	$29,545
Dept. Store Sales (changes from year ago)[3]	−3%	+3%	+7%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$18,168	$18,087	$17,316
Federal Gross Debt (billions)	$272.9	$273.0	$264.8
Bond Volume, NYSE (millions)	$13.1	$13.3	$15.4
Stocks Sales, NYSE (thousands of shares)	4,906	5,106	5,438
Loans and Investments (billions)[4]	$78.9	$78.9	$75.8
U. S. Gov't. Obligations Held (billions)[4]	$31.7	$31.4	$31.6
PRICES			
STEEL's Finished Steel Price Index[5]	189.38	189.38	181.31
STEEL's Nonferrous Metal Price Index[6]	203.5	204.8	219.0
All Commodities[7]	110.2	110.7	111.1
Commodities Other Than Farm & Foods[7]	114.4	114.6	113.0

[1]Dates on request. [2]Preliminary. [3]Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

serious as the decline in trade payments, is the rate at which factory workers are being hired. Hiring rates in the nation's factories remained virtually unchanged between July and August, the Bureau of Labor Statistics says. This is the first year since 1946 that factory hiring has not been stepped up appreciably between July and August. Among the industries with smaller than usual employment gains were furniture, fabricated metals and machinery. The industries suffering declines from the customary hiring rates were primary metals, transportation equipment, lumber, paper and tobacco products.

Salting It Away . . .

The present high personal savings rate and the inclination of consumers to dip into it will have a sizable bearing on future business conditions. During the first half of 1953, personal savings were rising at an annual rate of over $17 billion. Although less than the $20 billion annual rate of late 1951, the first half rate was almost 50 per cent higher than the pre-Korea norm, the National Industrial Conference Board points out in its *Business Record* discussion of "Savings and the Consumer Market."

Aid and Comfort . . .

Concerning savings and future retail markets, the board says that the proportionate share of total liquid assets held by upper income groups has evidently grown smaller in the last few years—the years of the Korean war. And since consumer spending varies, it is assumed, with the degree of concentration of liquid reserves among higher income groups, this situation will have a bolstering effect on future consumer markets.

Trends Fore and Aft . . .

Prime factor in the contraseasonal decline in railroad loadings of revenue freight during the week ended Oct. 3 was the drop in ore loadings, which decreased 5952 carloads below the previous week, the Association of American Railroads says . . . The General Electric Co. expects employment at its Schenectady, N. Y., plant to drop by several thousand in the next three years due to the return of more normal employment levels—such as existed between the years 1946 and 1950.

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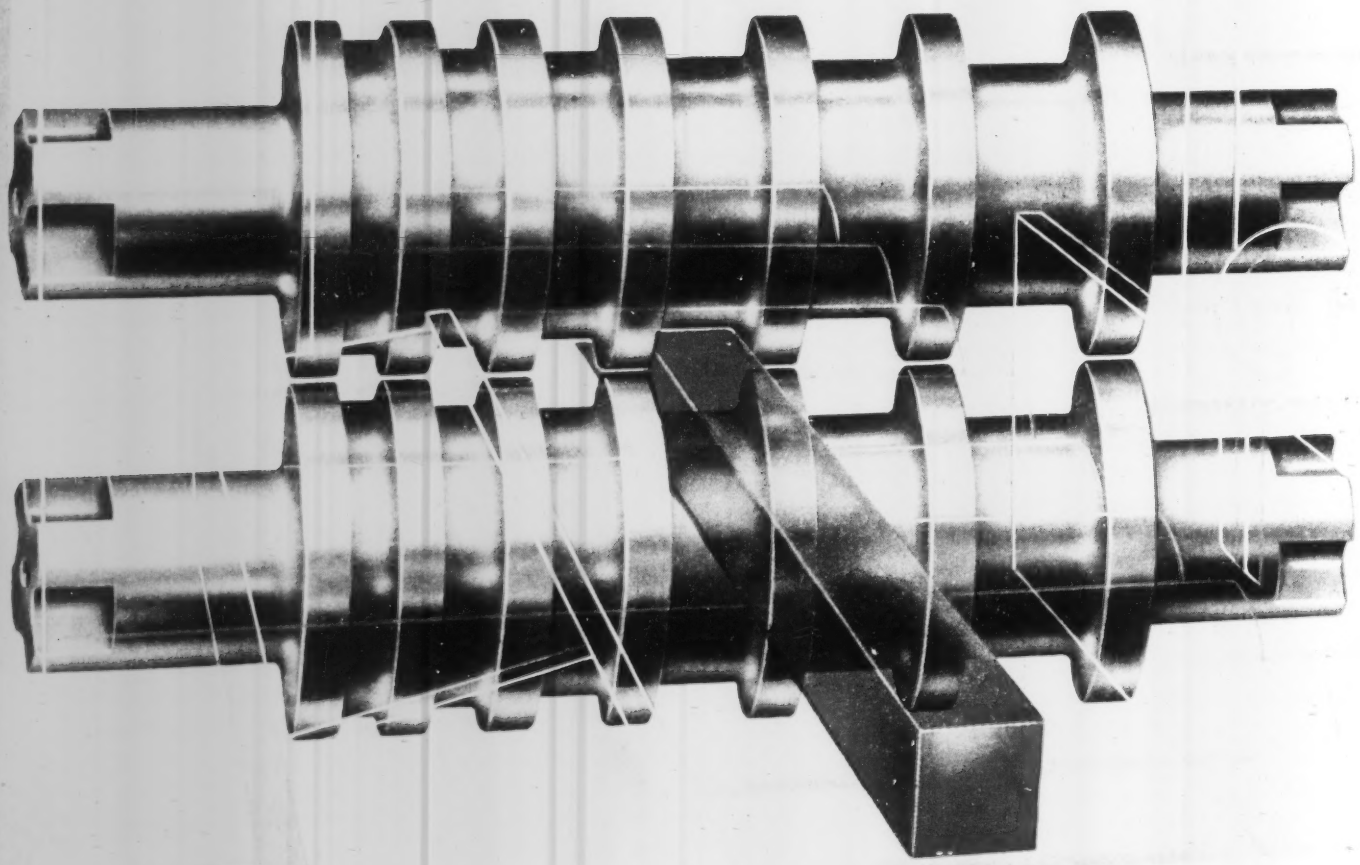


THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • PLANTS AT LIMA AND SPRINGFIELD, OHIO

Men of Industry

CLARENCE E. KILLEBREW
. . . Clark Equipment marketing post

Clarence E. Killebrew was named manager for marketing and sales, construction machinery division, **Clark Equipment Co.**, Buchanan, Mich. He joined the Clark organization the latter part of 1952 after a 12-year association with Frank G. Hough Co., where he served as general sales manager.

Alten Foundry & Machine Works Inc., Lancaster, O., appointed **Fred R. Bayne** chief engineer and **William A. Morris Jr.** product development engineer. Mr. Bayne joined Alten in 1951 as assistant chief engineer. He had formerly been with Cincinnati Milling Machine Co. Mr. Morris formerly served as consultant engineer at Parkersburg Rig & Reel Co.

Joseph Swain joined the staff of **Hancock Steel Co. Inc.**, Detroit, as assistant sales manager. For the last 18 months he has been manager of flat rolled sales for Central Steel & Wire Co., and prior to that was with Armco Steel Corp.

Robert S. Williams was appointed assistant sales manager, **Industrial Filtration Co.**, Lebanon, Ind.

Edward R. Cassidy succeeds **Harry M. Knobel**, retired, as Cleveland district traffic manager, **American Steel & Wire Division**, U. S. Steel Corp.

WILLIAM N. MULLANE
. . . supt. of Republic's Ideal Foundry

William N. Mullane was appointed superintendent of Republic Steel Corp.'s **Ideal Foundry Division** in Newton Falls, O. Assistant superintendent since 1946, Mr. Mullane succeeds the late **J. C. Miller**.

E. S. Chapman, for the last nine years vice president and general manager, **Clayton Mfg. Co.**, El Monte, Calif., was promoted to executive vice president in charge of all operations. **J. A. Cortright**, general sales manager since 1947, was named vice president-sales, with responsibilities extending to all three of Clayton's major product divisions. **Perry Arant**, at the head of product engineering for the last ten years, was appointed vice president in charge of engineering.

Robert E. Drury assumes a newly created position of director of manufacturing of **Redmond Co. Inc.**, Owosso, Mich. He has been director of industrial relations since 1952. **Harry E. Flint** has joined the firm to serve as general works manager.

Sheffield Steel Corp. appointed **E. L. Argo** assistant to manager of sales, bolt products division, with offices at Kansas City, Mo. He is succeeded by **Robert White** as Chicago district manager. Mr. White also continues in charge of the Washington office.

W. ALEXANDER McCUNE JR.
. . . gen. sales manager of Norton (Ltd.)

W. Alexander McCune Jr. was appointed general sales manager of **Norton Co. of Canada Ltd.**, Worcester, Mass. He assumes his duties Nov. 1 and succeeds **C. W. Fell** who will serve as an abrasive engineer in the Toronto area. Ill health forces Mr. Fell to assume a less strenuous part in the company's sales program. **Winton A. Vagedes** replaces Mr. McCune as abrasive engineer in the northern New Jersey area.

Dr. Raymond W. McNamee was made manager of research administration of **Union Carbide & Carbon Corp.**, New York. Since 1950 he has been superintendent, research and development department, of Carbide & Carbon Chemicals Co., a division. **Dr. Bruce J. Miller** becomes assistant manager of research administration.

V. L. Nicoli was named superintendent of the wire mill at the Buffalo plant of Colorado Fuel & Iron Corp.'s **Wickwire Spencer Steel Division**. **L. P. McNamara** becomes assistant superintendent.

R. E. Christin, chief metallurgist, Columbus Bolt & Forging Co., Columbus, O., for the last 29 years, has resigned to devote full time to his own business of metallurgical consultant on metal problems in conjunction with his company. **Elec-**

MAX B. MENTLEY

BEN F. BREGI

. . . elected vice presidents of National Broach & Machine Co.

trict Heat Treating Co., which he has operated since September, 1951, with F. P. Smith as superintendent.

New officers elected by **National Broach & Machine Co.**, Detroit, include **Max B. Mentley** as vice president-manufacturing and **Ben F. Bregi** as vice president-engineering; **George R. Smith** treasurer; **D. Pierson Smith** assistant secretary and assistant treasurer; and **Martin Linder** assistant treasurer.

Brace-Mueller-Huntley Inc. appointed **William B. Huntley Jr.** director of purchase and **Karl M. Heisler** general purchasing agent of its newly formed centralized purchasing department located in Syracuse, N. Y.

Crucible Steel Co. of America appointed **Wilson E. Gardner** manager of its New York branch, **Henry A. Sturm** manager, Boston branch, and **Alfred A. Companion** assistant manager at Boston. **Harold Barlow**, formerly New York branch manager, becomes special sales consultant to the New York branch.

J. Curran Freeman was appointed controller of **Dresser Industries Inc.**, Dallas.

F. E. Leib was made manager of sales of **Copperweld Steel Co.'s** wire and cable division at Glassport, Pa. **R. C. Ridley** was made assistant manager of sales. **C. C. Sowards** was made eastern sales manager with headquarters in New York, and **E. G. Elg** is western sales manager with headquarters in Chicago.

John L. Ham assumes the position of director of the metallurgical research department at **National Research Corp.**, Cambridge, Mass. He succeeds **James H. Moore**, now general manager of the company's subsidiary, Vacuum Metals Corp.

Charles D. Thomas was promoted to chief engineer of **General Rivets Inc.**, Buffalo. He formerly was a special project engineer.

Michigan Chrome & Chemical Co., Detroit, appointed **Dr. R. M. Lacy** technical director. For the last ten years he has been with General Electric Co., Bridgeport, Conn., as laboratory manager, major appliance division.

Walter B. Claus was named director of manufacturing, transducer division, **Consolidated Engineering Corp.**, Pasadena, Calif. He also serves as assistant head of the division. **Gerald S. Perkins** succeeds Mr. Claus as chief mechanical engineer of the company.

Robert T. Greiner was appointed district sales representative of the manufacturing division of **Aluminum Industries Inc.**, Cincinnati. He will cover Ohio, Kentucky and southern Indiana. Mr. Greiner succeeds **Richard Glandorf**, resigned.

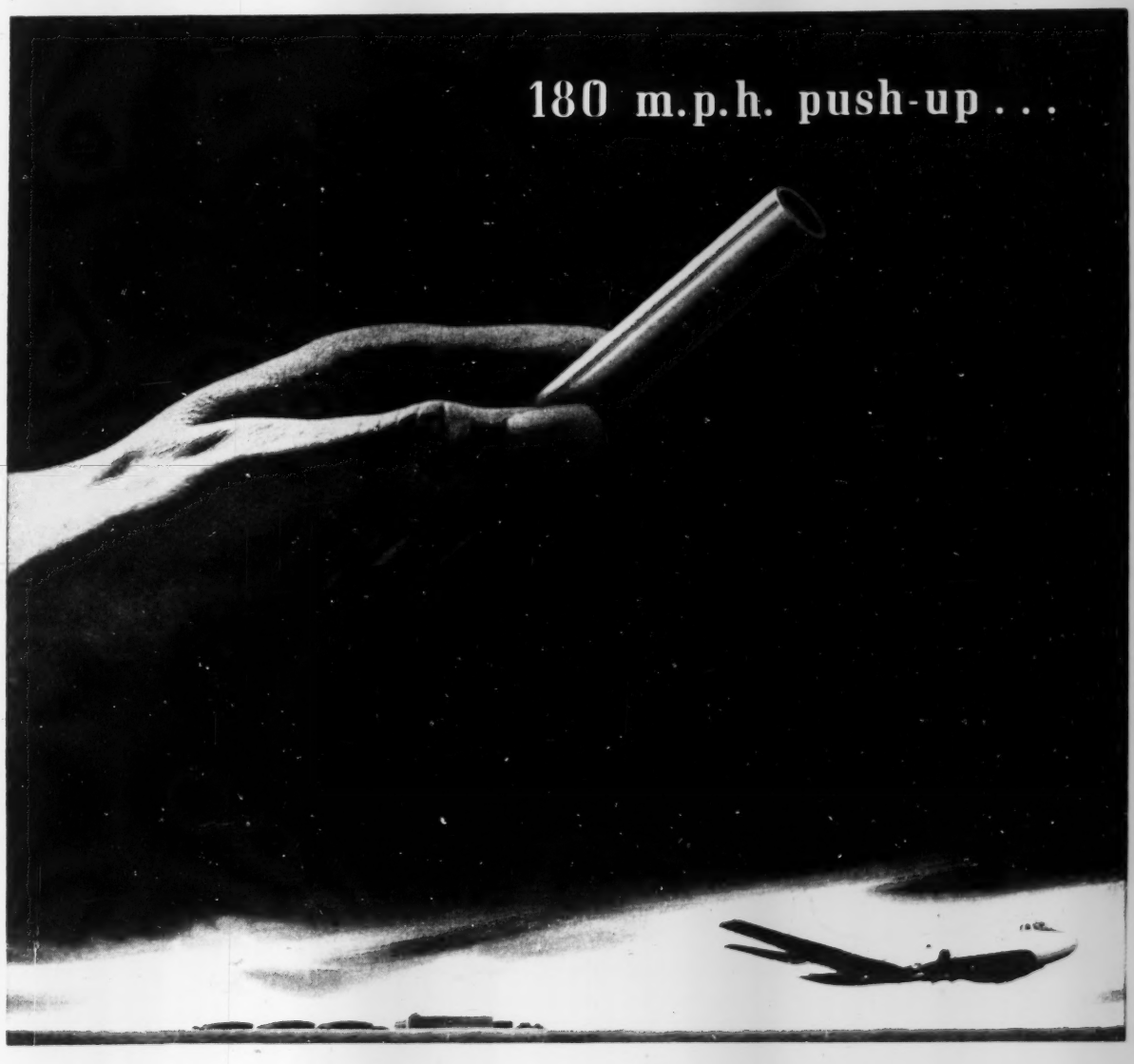
Ransburg Electro-Coating Corp. appointed **Reno Offringa** sales engineer for Michigan and northern Indiana. His temporary headquarters will be at his home in Spring Lake, Mich.

American Blower Corp., Detroit, a division of American Radiator & Standard Sanitary Corp., elected **J. C. Linsenmeyer** president to succeed the late **Clark T. Morse**, and **John W. Brennan** vice president of engineering. Mr. Linsenmeyer joined American Blower as an air conditioning engineer in 1931. He was made manager of its Columbus, O., plant in 1940 and works manager in 1946. He was elected vice

J. C. LINSENMEYER

JOHN W. BRENNAN

. . . elected to executive positions at American Blower Corp.



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E. L. CASEY
. . . Scaife v. p.-operations

THOMAS K. WELLS
. . . Flexonics general sales manager

RAYMOND A. THON
. . . GM's quality control dir. at Rochester

president-manufacturing in 1951. Mr. Brennan was formerly chief engineer.

E. L. Casey, formerly with Mullins Mfg. Corp., was appointed vice president-operations of **Scaife Co.**, Oakmont, Pa.

Bernard A. Chapman was appointed manager of manufacturing, **Nash-Kelvinator Corp.**, Detroit. For the last two and one-half years he has been production manager of the company, which he joined in 1937 as plant engineer at Kenosha, Wis.

James L. Woodley was promoted to general service manager of **Hyster Co.**, Portland, Oreg. He was production manager at the Danville, Ill., factory.

Conrad Bouchard and **Leo Grost** were made purchasing agents for **Fresh'nd-Aire Co.**, division of Cory Corp. In their new positions they are members of the staff at Fresh'nd-Aire's new Grayslake, Ill., plant, which manufactures air treatment appliances.

W. R. McLachlan was appointed general manager, gas turbine division, **A. V. Roe Canada Ltd.**, Toronto, Ont.

At the Aluminum Forge Division of **Willys Motors Inc.** at Erie, Pa., **W. E. Streeter** was promoted to factory manager, and **J. N. Johnston** becomes director of administrative services.

Thomas K. Wells was made general sales manager, **Flexonics Corp.**, Maywood, Ill. With the company 12 years, he was most recently sales manager for its bellows and aircraft divisions. **Howard W. Griesbach** becomes assistant sales manager, bellows division, and **Richard H. Sabel** was made sales development manager. Mr. Griesbach returns to Flexonics after eight years with Brown Instrument Division of Minneapolis-Honeywell Regulator Co. Mr. Sabel was general manager, Midwest Roof Deck Co.

John K. Deasy was named traffic manager to succeed **A. S. Earp**, retired, at **Weirton Steel Co.**, division of National Steel Corp., Weirton, W. Va. **F. J. Walliser** and **H. E. Freas** were made assistant traffic managers.

Robert P. Allison was appointed manufacturing consultant to **General Electric Co.'s** Weathertron department, Bloomfield, N. J. He will co-ordinate manufacturing facilities with product development. Mr. Allison formerly was manager of manufacturing of conduit products for GE's construction materials department in Bridgeport, Conn.

Ross A. McCallum is general purchasing agent of **Plate & Structural Steel Ltd.**, Canada.

Raymond E. Hale was made resident manager of **Jones & Laughlin Steel Corp.'s** new Louisville warehouse.

Rochester Products Division, Rochester, N. Y., appointed **Raymond A. Thon** director of quality control for all items manufactured by this division of General Motors Corp. His association with GM began in 1915. He has been serving as assistant director of quality control.

Robert J. Bodeman was transferred to the Chicago sales office of **Harbison-Walker Refractories Co.** He was in the basic sales department in Pittsburgh. **Ernest C. Ullom**, a salesman in the Buffalo office, was transferred to the New York sales office.

Allied Research Sales Corp., subsidiary, Allied Research Products Inc., appointed **Tom Richards** as its representative in Cincinnati.

Clifford S. Stephens, formerly in charge of the Washington office of **Trion Inc.**, McKees Rocks, Pa., was appointed assistant to the president.

R. M. Ellis, former factory representative in the United States and Canada for Lister-Blackstone Inc., was appointed a special representative in Canada for the engine division of **National Supply Co. Ltd.**, with headquarters in Toronto, Oat.

James E. Butler was appointed manager of product sales of **Franklin Balmar Corp.**, Baltimore. He will have offices in New York.

E. P. Additon will be located in Pittsburgh as sales engineer for

Wickwire oil tempered wire . . .

STEEL RIBS FOR HEAVY UMBRELLAS, TOO

Not all oil tempered wire is used for springs. A typical example of its diversified applications is the familiar beach umbrella, also used on lawns and terraces, and in modified form on tractors, bulldozers and similar equipment.

For the steel ribs of these heavy umbrellas many manufacturers find Wickwire oil tempered wire ideal. This wire is stiff so as to retain its shape; uniform so that all wires bend the same; flexible so that the wires follow the contour of the umbrella; and ductile so that they may be easily swaged.

Wickwire oil tempered wire is available in a size range from .007" to .5625". Round wire can be supplied in coils or cut lengths. Wickwire also manufactures flat tempered wire.

High or low carbon steel . . . in all tempers, grades and finishes. For the Wire You Require: Check First With Wickwire.

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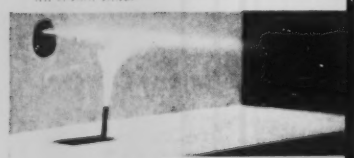

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1. **It's Non-Flammable** This newly developed hydraulic fluid won't burn or flash even when sprayed into an open flame.
2. **Prevents Corrosion** The new formula contains inhibitors developed by Houghton to prevent corrosion and rust in any hydraulic system.
3. **It is Non-Toxic** Safe for workers to handle and it bears no unpleasant odor.
4. **Fortified Lubricity Saves Equipment** Reinforced for high film strength by a chemical additive that gives metal parts greater protection for longer periods.
5. **Oxidation Stability Adds Extra Life** Its exceptional resistance to oxidation assures longer service life—proved by over 5000 hours of testing in equipment in actual use.
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WILLIAM RODGERS
. . . Blaw-Knox v. p.-gen. sales mgr.

LEO L. GILL
. . . Harbison-Walker appointment

ROSS B. HOPKINS
. . . plant metallurgist at Rodney Metals

Blaw-Knox's chemical plants division.

William Rodgers was elected vice president and general sales manager of **Blaw-Knox Co.**, Pittsburgh. He has served in the latter position since joining the company in April, 1953.

James P. Raugh joins **Cunneen Co.**, Philadelphia, to head its industrial operations. He has resigned as vice president of General Refractories Co. where he has been associated for the last 25 years.

Hitchiner Mfg. Co., Milford, N. H., appointed **Donald W. B. Kelley** assistant to A. F. Hitchiner in its national sales of precision investment castings.

E. F. Drew & Co. Inc., New York, named **M. E. Reiner** division manager in charge of its power chemicals division.

Leo L. Gill, since 1923 in the engineering and technical sales departments of **Harbison-Walker Refractories Co.**, Pittsburgh, was appointed manager, technical sales department.

Gordon W. Rowand was made assistant sales manager, **Link-Belt Speeder Corp.**, with headquarters at Cedar Rapids, Iowa. He was district representative in Illinois, Michigan and Indiana.

Howard Alperin joined **Zeigler Steel Service Corp.**, Los Angeles, as sales representative for the southeast Los Angeles industrial area and Orange county, Calif.

Rolled Steel Products Corp. named **Robert W. Otter** Milwaukee sales representative.

Robert Carr was made sales engineer in the Chicago branch sales office of **Reed-Prentice Corp.**

Rodney Metals Inc., New Bedford, Mass., appointed **Ross B. Hopkins** plant metallurgist. For the last 13 years Mr. Hopkins has been associated with American Steel & Wire Division, U. S. Steel Corp.

Raymond H. Rice, engineering vice president, and **James S. Smithson**, manufacturing vice president, were elected to the board of **North American Aviation Inc.**, Los Angeles.

Sterling Electric Motors Inc., Los Angeles, appointed **John F. Curd** district manager at Cincinnati, location of which office has been moved to 2904 Woodburn Ave. **Leonard A. Johnson** was made comptroller of the company.

Livingstone Engineering Co., Worcester, Mass., appointed **L. E. Petzinger** field engineer for northern Ohio with headquarters in Cleveland.

OBITUARIES...

Lucien W. Mueller, 58, chairman of the board of **Mueller Co.**, Decatur, Ill., died Oct. 7.

Henry G. Metz, secretary and purchasing agent of **Diefendorf Gear Co.**, Syracuse, N. Y., died Oct. 1.

William P. Stein, 80, president and cofounder of **William P. Stein Co. Inc.**, Rochester, N. Y., died Oct. 5.

Richard W. Parsons, until recently technical director of **Ohio Brass Co.'s** main plant in Mansfield, O., died Oct. 5 after a long illness.

Chester B. Hamilton, 69, president and founder of **Hamilton Gear & Machine Co.**, Toronto, Ont., died Oct. 5.

George F. Applegate, secretary and sales manager, **Ajax Electrothermic Corp.**, Trenton, N. J., died Sept. 27.

Charles A. Kelly, 73, a mechanical engineer with **Bucyrus-Erie Co.**, Milwaukee, died Oct. 3.

Erik G. Grundstrom, 68, chairman of the board and factory manager, **Advance Aluminum Castings Corp.**, Chicago, died Oct. 4.

H. N. Nelson, 43, assistant sales manager, Findlay, O., Division, **Gar Wood Industries**, died Sept. 29.

E. J. Skinner, board chairman, **Skinner Chuck Co.**, New Britain, Conn., died Oct. 7.

Aids Mexican Industry

Knapp Mills organizes firm to improve efficiency in lead products plants in Mexico

FORMATION of Knapp Mills de Mexico, S.A., with headquarters in Mexico City, is announced by Knapp Mills Inc., New York, producer of lead-clad steel and lead-clad copper.

Mexico produces about 15 per cent of the world's lead. Nevertheless, in order to meet the high standards of the growing chemical and process industries, it is necessary for Mexico to export its lead to be fabricated into such products as sheet lead and lead pipe because standards of manufacture in that country are not adequate. The finished products then have to be shipped back into Mexico for end use there.

High Quality—In recent years, the American chemical industry has built many plants in Mexico. Both the American firms and the Mexican chemical producers insist on finished equipment capable of resisting the corrosion produced by acids and chemicals.

Knapp Mills has been making a survey of the facilities of Mexican lead products plants with a view toward improving methods of manufacture to bring them up to American standards. The newly-created firm has entered into a contract with the principal Mexican lead products producer, A. Valezzi Sucs., S. A., under which it will acquaint Valezzi with all of the knowledge, skills and methods required to produce the highest quality lead products.

In return, Knapp Mills de Mexico received an exclusive contract for the distribution and sale of such products in Mexico and the United States. This arrangement will eliminate the wasteful practice of shipping Mexican lead to America only to be fabricated and shipped back to Mexico in finished form.

Installation of lead equipment for the chemical industry is frequently highly complicated. This skill is practically unknown in Mexico with the result that the chemical industry has found it necessary to import skilled workmen to install the equipment. To help solve this phase of the problem, Knapp Mills de Mexico is instructing groups of Mexican metalworkers in all skills pertaining to lead installation.

Vega Brick Output To Rise

Harbison-Walker Refractories Co., Pittsburgh, will produce Vega superduty silica brick at its Warm Springs, Calif., Works. Until recently the Warm Springs operation was devoted exclusively to the manufacture of basic refractories.

Scovill Opens Shipping Center

Scovill Mfg. Co., Waterbury, Conn., opened its $500,000 warehousing and shipping center, located near the middle of its main plant in that city. All merchandise will be stored on wooden pallets and moved by motorized lift trucks.

Universal-Cyclops Expands

Universal-Cyclops Steel Corp., Bridgeville, Pa., purchased Vanadium Corp. of America's land and buildings in that city. Vanadium Corp. recently moved its operations to a new plant location near Cambridge, O., and had terminated production at Bridgeville.

Universal-Cyclops says the additional facilities were acquired to provide for its research and development program. The company says that it has no present plans for utilization of the property or buildings for steel manufacture or other production use.

All-Cable Bridge

Just completed, this is the first "all-cable" highway suspension bridge ever built, says the builder, John A. Roebling's Sons Corp., Trenton, N. J. Located in El Salvador, the $2.5-million San Marcos bridge uses only stressed diagonal cables with no steel girders to support bridge deck

V & O Press Names Agent

V & O Press Co., division of Emhart Mfg. Co., Hudson, N. Y., manufacturer of power presses, automatic feeds and special equipment, appointed James Engineering & Machinery Co., Detroit, as its representative in that area.

Yale & Towne Forms Division

Yale & Towne Mfg. Co., New York, established a Powdered Metal Products Division, consolidating the company's expanding operations in the field of powder metallurgy. The new division unifies under one management the recently acquired Powdered Metal Products Corp. of America, Franklin Park, Ill., and the American Sintered Alloys Division, Bethel, Conn., acquired by Yale & Towne in 1952. George L. Bachner, formerly president of PMPCA, was appointed general manager of the new division with headquarters in Franklin Park.

Equipment Firm Changes Name

Consolidated Car-Heating Co. Inc., Albany, N. Y., changed its corporate name to Consolidated Metal Products Corp. The company produces bus, rapid transit and railway equipment. Officers are: Harold H. Shincel, president; G. E. Oakley, vice president; F. M. Roos, secretary; and E. E. Ludlum, treasurer.

Rheem Plans West Coast Plant

Seattle officials of Rheem Mfg. Co., New York, confirm to STEEL the purchase of a 15½-acre tract at Tacoma, Wash., where it is planned to construct a plant next year. Before plans are fully developed, surveys will be made to determine the type of product that is most in demand in that area and designs will be worked out accordingly. Rheem manufactures steel containers, tanks,

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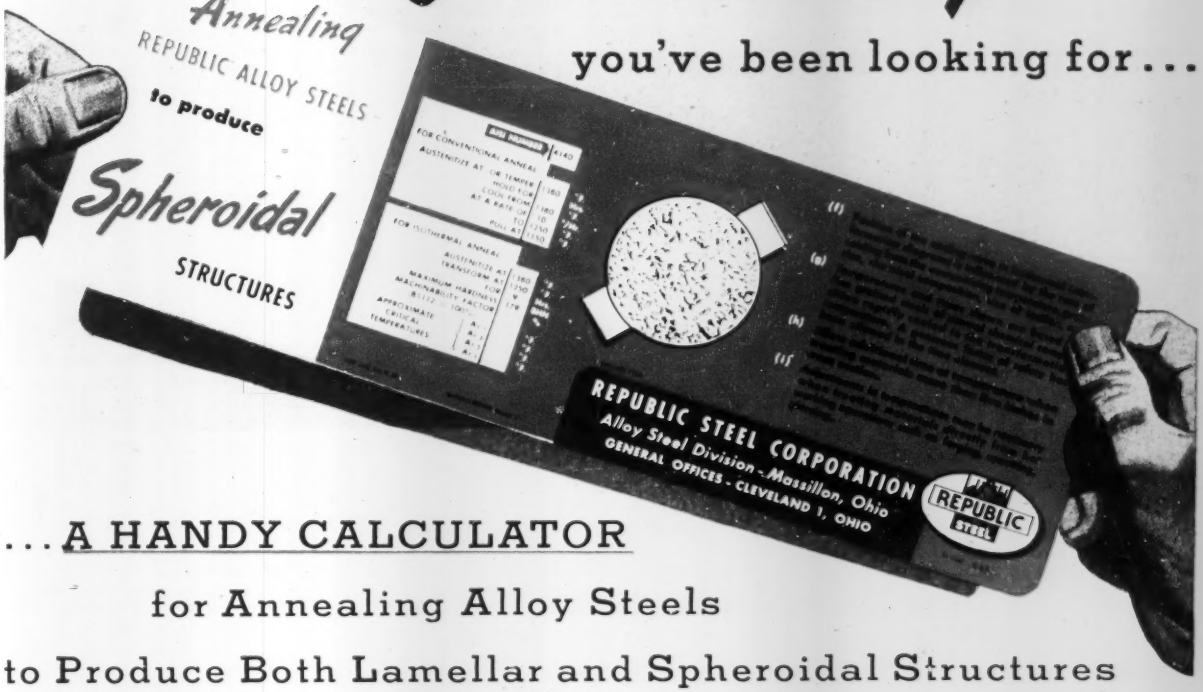

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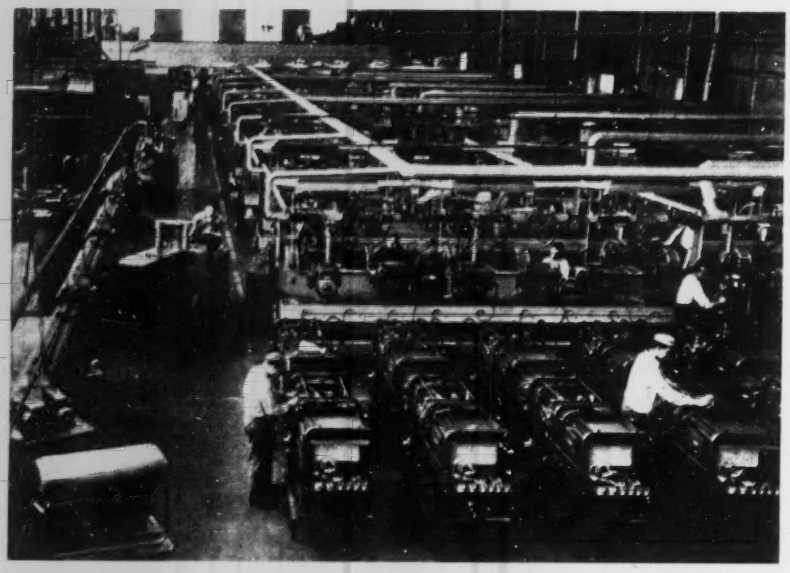


Electric Plant Tests by the Acre

In a block-long bay which D. W. Onan & Sons Inc., Minneapolis, describes as the "world's largest electric plant test room," Onan electric plants get their initial trial runs. The test room has a capacity of 640 electric plants of all sizes per day. At any given moment during an average day's testing, the roomful of power units puts out about 1 million watts, enough to light a small town

heating equipment and many other products.

Pipe Fabricator Expanding

Structural Steel & Forge Co., Salt Lake City, Utah, now is operating a pipe seam welding machine for use on large diameter pipe, purchased from Penn Tool & Machine Co., Danville, O., at a cost of $50,000. Other new equipment on order will enable the company to turn out 20 to 36 in. pipe in lengths of up to 30 ft.

Stanley Seeks Loan for Plant

Stanley Aviation Corp., Buffalo, is negotiating for a government loan to build a plant at Aurora, Colo.

Pekay Consolidates Offices

Because of increasing orders for foundry equipment installations and expanding sales of materials handling equipment nationally, Pekay Machine & Engineering Co., Chicago, has consolidated all engineering, design and sales service functions in its main offices at Chicago. The firm closed its Detroit office under this program. Specializing in sand handling systems and equipment, the company also does a substantial business in custom tube-bending and other metal processing and in the sale of patented elevator conveyor buckets, depth control devices for metalworking machines and other items.

Advertising Department Moved

Advertising department of Crucible Steel Co. of America, Trent Tube Co. and Rem-Cru Titanium Inc., under the direction of Michael Stumm, is now located in the Oliver building, Pittsburgh. This unit formerly was housed in the New York offices of Crucible Steel.

Norge Appoints Distributors

Norge Division, Borg-Warner Corp., Chicago, appointed as its representatives: Weiss & Besserman Co. Inc., Newark, N. J., and Appliance Distributors Inc., Des Moines, Iowa.

Julius Blum Opens Warehouse

Julius Blum & Co., producers and suppliers of stock elements for ornamental metal work; steel and nonferrous bars, shapes and tubing; plastics; metalworking machinery, opened general offices and warehouse at Carlstadt, N. J. The firm will maintain for some months its former warehouse at 532 W. 22nd St., New York.

Hagan Names West Coast Agent

George J. Hagan Co., Pittsburgh, appointed W. P. Wooldridge Co., San Francisco, with branch offices in Los Angeles and Salt Lake City, Utah, as its western sales representative. Particular emphasis will be given to Hagan automatic rotary-hearth furnaces.

Monroe Tube Enlarges Plant

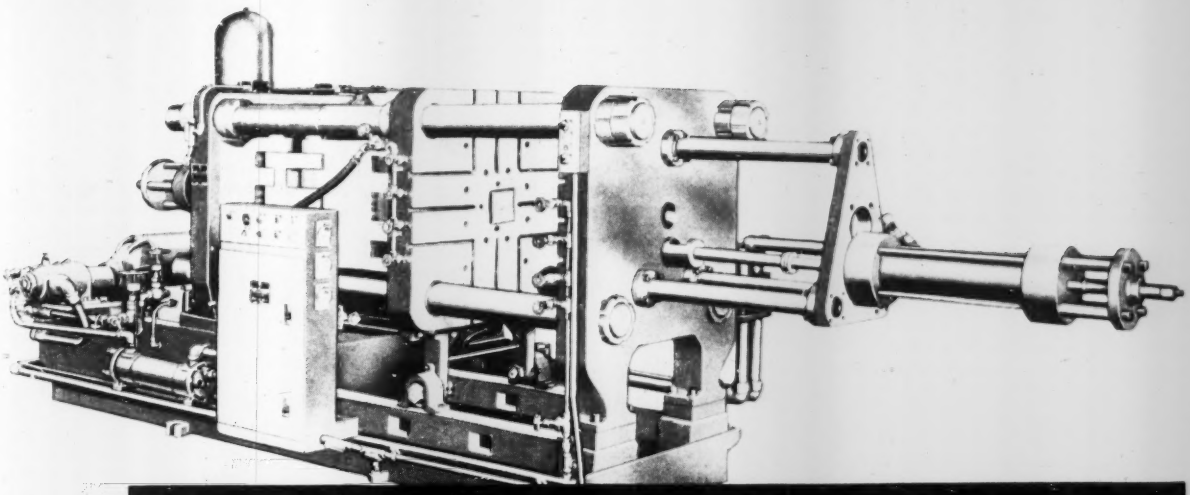
Monroe Tube Co. Inc., Monroe, N. Y., completed construction of a 10,000-sq-ft addition to its plant. The company makes cold-drawn steel, mechanical seamless, condenser, heat exchanger and pressure steel tubing.

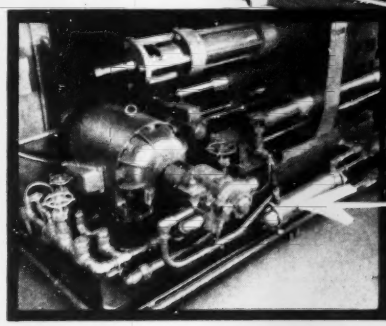
Porter-Cable Sells Division

Industrial Abrasive-belt Grinder Division, Porter-Cable Machine Co., Syracuse, N. Y., became the property of Engelberg Huller Co. Inc., that city, on Oct. 1. For Porter-Cable, the grinder transaction marks another phase of its program to concentrate its activities in the portable electric tool industry. Since World War II the company has been acquiring the rights to other power tool interests while dropping unrelated lines.

AISE Elects Officers

Eric L. Anderson, superintendent of the electrical department, Bethlehem Steel Co., Johnstown, Pa., was elected president of Association of Iron & Steel Engineers, Pittsburgh. Other officers are: John H. Vohr, general superintendent, U. S. Steel Corp., Gary, Ind., first vice president; W. H. Collison, assistant general superintendent, Blast Furnace Division, Great Lakes Steel Corp., Ecorse, Mich., second vice president; J. D. O'Roark, assistant to manager, service and maintenance, Weirton Steel Co., Weirton, W. Va., treasurer; and Leonard Larson, chief engineer, Republic Steel Corp., Cleveland, secretary.



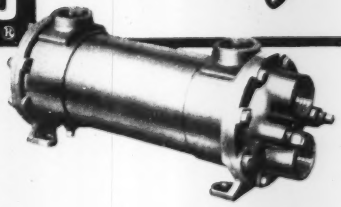


a basic feature

of Cast-Master Die Casting Machines

Ross Exchangers for oil cooling

ROSS *Exchangers*



Designed to apply a locking pressure of 500 tons in producing aluminum castings up to 10½ lbs. per shot, this Model B 20-A Cast-Master incorporates many outstanding basic features. Among them: a Ross Type BCF Exchanger.

Hydraulic oil supplied by the 130-gal. reservoir is thereby kept from overheating and thinning. Capacity-robbing pump slippage is prevented!

"Ross Exchangers are doing their job so well that we accept them as one of the family", states Cast-Master, Inc.

Vouching for the rugged dependability of Ross Type BCF Exchangers are numerous other leading manufacturers of varied types of hydraulic machinery. They, too, have adopted these pre-engineered, fully standardized, all copper and copper alloy units.

For more facts, request Bulletin 1.1K5.

KEWANEE-ROSS CORPORATION

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

1431 WEST AVENUE • BUFFALO 13, N. Y.

In Canada: Kewanee-Ross of Canada Limited, Toronto 5, Ont.

Serving home and industry: AMERICAN STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS

Packard Electric Expands

General Motors' division is enlarging its facilities to fabricate copper wire

PACKARD ELECTRIC Division, General Motors Corp., Warren, O., plans the largest single expansion program in its history. The project involves new building construction and the rearrangement of existing facilities. When completed, it will expand and extend the division's facilities to fabricate copper wire.

Plans call for a new plant of about 200,000 sq ft which will house a copper rod mill for conversion of wire bar to rod, as well as expanded wire drawing and magnet wire facilities.

Unification—B. N. MacGregor, general manager of the division, says that the "project will make possible a modern, integrated, highly efficient operation converting basic copper in wire bar form as received from the refineries to finished magnet wire or automobile wire all in one location."

Packard recently completed its 12th expansion program which was started in 1951 and involved the erection of an administration and employee facilities building, as well as construction of an addition to Packard's plant No. 8 on Paige avenue and Griswold street, Warren. Initial production in this plant was announced recently.

In addition to being a major supplier of wiring assemblies for the automotive, aircraft and appliance industries, the division also supplies fractional horsepower motors for the home appliance field.

Trailmobile Opens Branch

Trailmobile Inc., Cincinnati, opened a factory branch in New Haven, Conn. Kenneth A. Jefferies is manager of this branch which is part of the company's Eastern Division of which John J. Peterson is division manager.

Pipe Firm Expanding

As part of its program of expansion in the extrusion of pipe and the fabrication of plastic structures, Atlas Mineral Products Co., Mertztown, Pa., organized a Thermoplastic Structures Division. The division has established fabrication shops and sales outlets in Boston; Cincinnati; Cleveland; Detroit; Houston; Los Angeles; Milwaukee; Philadelphia; St. Louis; Johnson City, Tenn.; Passaic, N. J.; Peoria, Ill.; and Waterbury, Conn.

Work Saving Week

NATIONAL drive to make work easier in America's factories is being organized by John R. Immer, director, Work Saving International, Silver Spring, Md. Factories are urged to plan now for a local Work Saving Week campaign to coincide with the national drive during the week of Nov. 16-20.

Idea of the campaign is to stimulate interest in improved methods. Suggestion systems, training programs and worker-supervisor committees are well-known techniques in American industry. The proposed campaign will bring these and other techniques together into a unified program which increases the effectiveness of each technique and produces a receptive attitude to new ideas in the shop. Similar campaigns are being held in many other countries.

Iron Furniture Firm Expands

A 50 per cent increase in production is expected to result from a newly completed expansion at California Wrought Iron Co.'s plant in Pasadena, Calif. The firm's space is now about 20,000 sq ft for production of wrought iron furniture.

R-S Furnace Incorporated

Furnace Division of R-S Products Corp. was incorporated and will be known as R-S Furnace Corp., a subsidiary of Hardinge Co. Inc., York, Pa. The new corporation will maintain its sales and engineering offices at the same address as formerly, 4555 Germantown Ave., Philadelphia 44. R-S Furnace Corp. produces furnaces for billet-heating, forging and heat-treating of steel and nonferrous materials.

Expansion Program Progresses

Electro Metallurgical Co., New York, has completed the first furnace in a $29-million expansion program at Ashtabula, O. The unit is housed in a newly built structure of precast concrete panels with steel supporting members. Work on six other electric furnaces for the plant is continuing.

Plating Firm Organized

Harper-Leader Inc. was organized by Perry J. Sloane and Isidore Cross in Waterbury, Conn. The firm specializes in plating of precious metals. Engineering and decorative applications of the platinum family of metals are a specialty. Laboratory facilities also are available for experimental and development work.

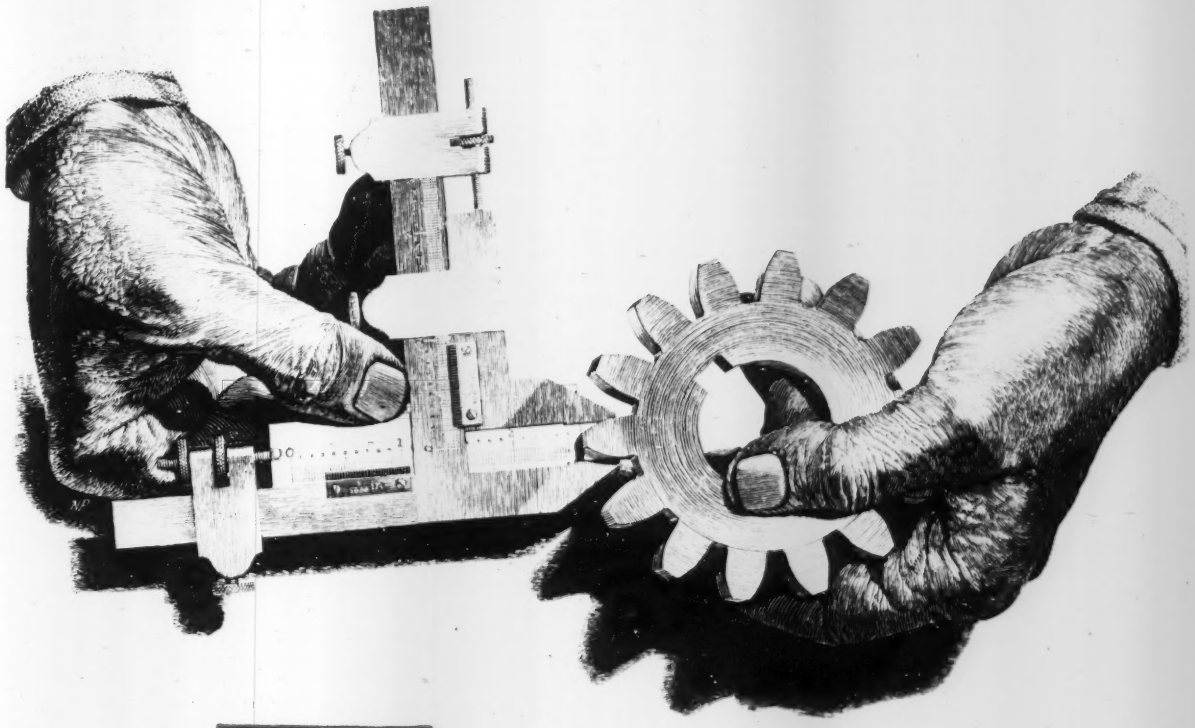
Wolff Heads Association

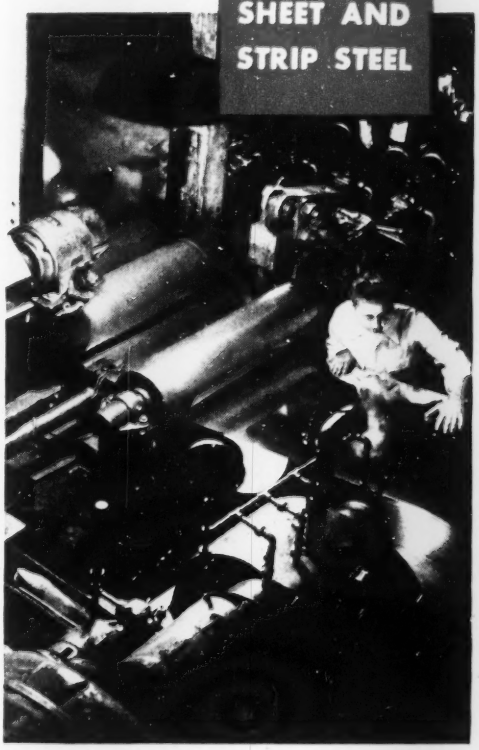
Burton L. Wolff, president of Benjamin Wolff & Co., Melrose Park, Ill., was elected president of National Association of Aluminum Distributors. Other officers are: Vice president, Wayne Rising, Ducommun Metals & Supply Co., Los Angeles; vice president, John J. Hill III, Hill-Chase & Co. Inc., Philadelphia; treasurer, Marvin B. Marsh, Marsh Steel Corp., North Kansas City, Mo.

United Stove Changes Name

United Stove Co. changed its corporate name to United Metal Craft Co., Ypsilanti, Mich., a subsidiary of Gar Wood Industries Inc., Wayne, Mich. E. R. Leeder, executive vice president of Gar Wood and president of United, says that the subsidiary is producing custom stampings, components and assemblies for the automotive and appliance industries, and automotive hydraulic truck equipment marketed by National Lift Co., another Gar Wood subsidiary.

United also is commencing fabrication of a line of metal household products, including utility





Like a precision gear . . .

STEELMAKING, TOO, REQUIRES EXACT MEASUREMENTS

Whatever your requirements for formability, uniformity, or drawing qualities, you'll find J&L Sheet & Strip . . . accurately and faithfully produced to meet your specifications. Complete understanding of the end-use of the sheet or strip you order is a rigid requirement of J&L production. You can depend upon J&L products to fit your production line.

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH

J&L STEEL

You know you can count on his help

When the need was grim and the time was short, this man somehow always got there to see things through. You called him, *knowing* he would come.

And this "old-fashioned" idea of responsibility and service still lives today, in those individuals and enterprises that have been fortunate enough to inherit it. It governs *this* enterprise, for one, in its relationships with all those who depend on it for knowledge, integrity, and willing acceptance of full responsibility in time of need. We honor these *men with missions,* because we understand them well.

. . .

The BRISTOL BRASS CORPORATION, makers of Brass since 1850 in Bristol, Conn. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

"Bristol-Fashion" means **Brass at its Best**

tables, serving carts, and lawn furniture. Under an agreement with Flexi-Fend Inc., Washington, United has the exclusive manufacturing rights pertaining to a combination metal and rubber mudguard for use on highway trucks and trailers. Several other products are being considered, the potential of which will increase United's activities to its productive capacity, says Mr. Leeder.

Simplified Pricing

MANY of the complexities of grinding wheel pricing, a long-standing problem for that industry, have been eliminated by a new system developed by United States Rubber Co., New York.

The simplified net pricing schedule will allow direct computation of net prices for most items, including straight side, cup and cone wheels. Only for unusual specifications is it necessary to apply an extra step.

The new pricing procedure eliminates complicated schedules, list price additions and a variety of multipliers which have been the accepted tools in determining the price of a grinding wheel.

Enters Fabricating Field

Ted Nelson Co., Portland, Oreg., plans to engage in metal fabricating and erection, using the Swan Island plant which was formerly headquarters of Thompson Metal Fabricating Co.

Talon Opens Georgia Plant

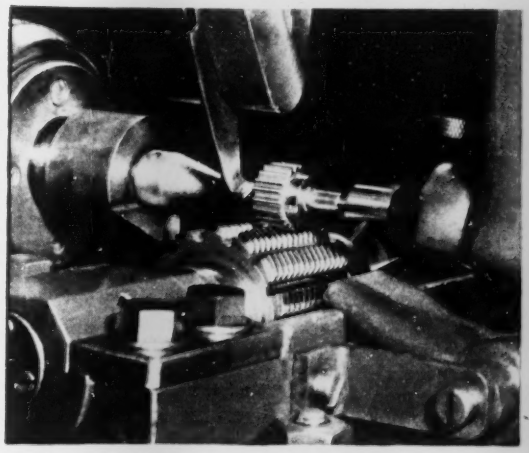
Talon Inc., Meadville, Pa., dedicated its newest southern plant, located in Cleveland, Ga. Management of the plant is under the supervision of Lewis R. Cooper.

Penn Metal Appoints Agent

Guibert Steel Co., Pittsburgh, was appointed by Penn Metal Co. Inc., New York and Parkersburg, W. Va., as distributor for the latter company's Lightsteel structural sections.

FINE PITCH HOBS

FOR PRODUCTION HOBBING



OF PRECISION FINE PITCH GEARS UP TO 270 DIAMETRAL PITCH

Barber-Colman Hob Engineers have developed special techniques for manufacturing hobs as fine as 270 pitch. These fine pitch hobs can be supplied to meet your specific accuracy requirements, ranging from Class AA to Class C tolerances, depending upon pitch.

Continuous development by Barber-Colman engineers with both Hobs and Hobbing Machines has resulted in standard production techniques for gears in this pitch range. Most of these gears are cut on Barber-Colman No. 1½ and 6-10 Hobbing Machines, or for maximum accuracy on No. 6-10 Precision Machines. Gear tolerances of .0003" total composite error, and .0002" tooth-to-tooth composite error, are now possible in these finer pitches. When you require small, fine pitch gears in high production with close limits of accuracy, call your Barber-Colman representative for assistance. With the precision and engineering built into the hobs and machines, he can help you reduce these requirements to ordinary gear cutting procedure.

Write For a Copy of Facts About Fine Pitch Hobs

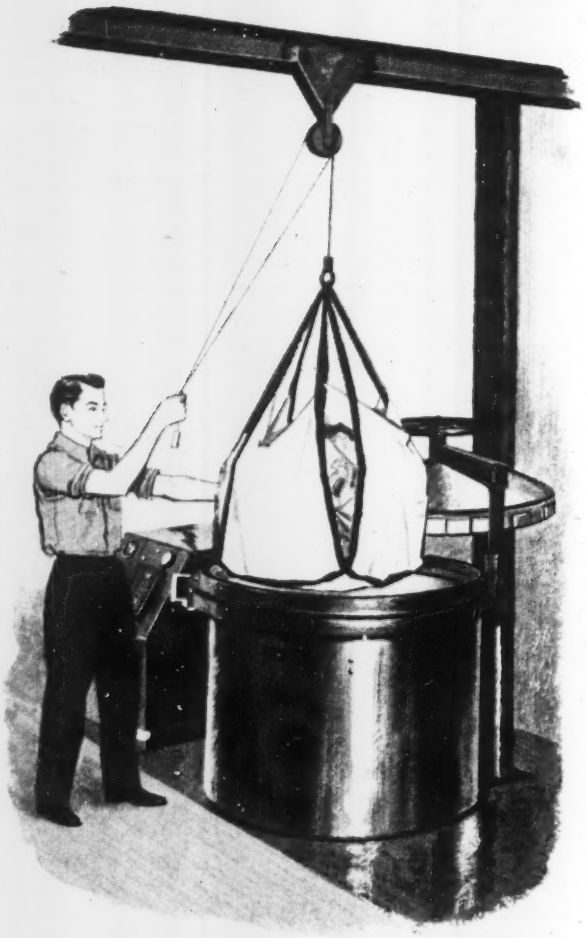
Barber-Colman Company

COLMAN

GENERAL OFFICES AND PLANT, 7710 ROCK STREET, ROCKFORD, ILLINOIS

ALUMINUM IS Why

IT'S EIGHT MINUTES FROM "WET WASH" TO "DAMP DRY"



The Zephyr Hydraxtor takes moisture out of clothes the same way a careful laundress would—by gentle squeezing that never pops a button or rips the sheerest fabric. In eight minutes, a sopping wet 220-pound load turns damp dry, ready for fluffing or ironing.

Cover, breech ring and clamp ring of the Hydraxtor all posed tough problems, for they had to combine light weight and low cost with easy machinability and elimination of red rust. On one or more counts, the manufacturer disqualified fabricated steel, galvanized cast steel and cast stainless steel.

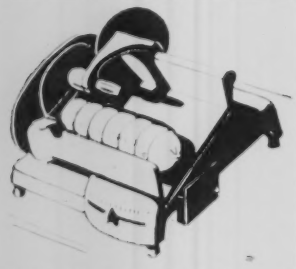
Then he found the answer—aluminum sand castings. Combined weight of the three parts fell from 1,000 pounds to 400. Savings on material ranged up to 98 cents per pound. And still greater economies were realized from the easy machinability traditional with aluminum, and from lower freight charges.

ALCOA IS How

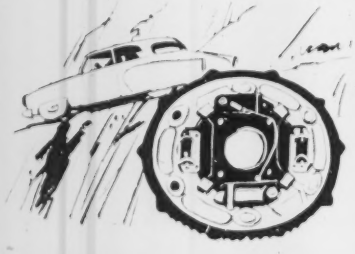
Alcoa drew on 42 years' experience in sand casting and operation of five sand foundries to furnish the specific alloy and the qualified counsel to make these Hydraxtor parts practical. And because no local foundry offered equivalent service, Alcoa undertook the actual production, as well. Whatever your problem in light-metal castings—sand, die, permanent mold or plaster—you can draw on Alcoa's widespread facilities for the answer. Start by calling your Alcoa sales office, or write: Aluminum Company of America, 877-K Alcoa Building, Pittsburgh 19, Pa.

Alcoa Aluminum

ALUMINUM COMPANY OF AMERICA

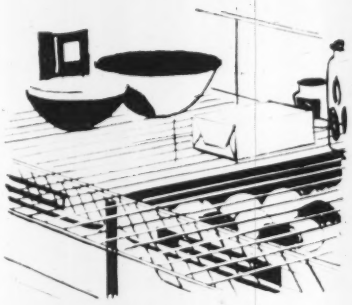


FOOD SLICERS, using permanent-mold aluminum castings for the entire surface—excepting knife and gauge plate—benefit by a bright, clean, attractive appearance and enduring resistance to staining and rust streaks.



IN AUTOMOTIVE DISC BRAKES, pressure plates of cast aluminum dissipate heat with great rapidity, thus minimizing thermal expansion and resultant "fade," or decreased braking action. They're lighter, too, and that helps reduce the unsprung weight.

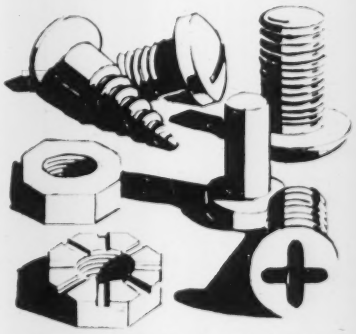
SPOKE WHEELS for trucks and trailers, when made of cast steel or malleable iron, tip the scales at 80 pounds. Made as aluminum permanent-mold castings, they are 56 pounds lighter—a notable reduction in unsprung weight that permits a higher payload.



ALCOA® ALUMINUM takes all finishes that other metals will take—plus gleaming, rust-resistant anodic coatings which are best on aluminum.

***TOOL AND JIG PLATE**—Forming and bending dies for aluminum shapes are economical when made of Alcoa Tool and Jig Plate. It is a cast product. Stress relieved, with close tolerances of flatness and surface smoothness.

FABRICATING this double-wall fuse cap formerly involved an expensive welding operation. Now it is impact extruded by a single press stroke at Alcoa's Edgewater (N. J.) plant.



***FASTENERS** of aluminum are made by Alcoa in every commercial size and shape. A must with aluminum assemblies, they also dress up wood and plastic products.

***INDUSTRIAL BUILDING SHEET** of Alcoa Aluminum is light and easy to install. It never requires painting or maintenance—costs far less than you'd think.

ALCOA COVERED WIRE is widely used for secondary distribution and service drop cable. It is light, easy to install—costs far less than copper conductor.

Products marked* are available from your local Alcoa Distributor listed here

ALABAMA
Birmingham
Hinkle Supply Co.

CALIFORNIA
Los Angeles
Ducommun Metals & Supply Co.
Pacific Metals Co., Ltd.
San Francisco
Pacific Metals Co., Ltd.

COLORADO
Denver
Metal Goods Corp.

CONNECTICUT
Milford
Edgcomb Steel of New England, Inc.

FLORIDA
Hialeah
Florida Metals, Inc.
Jacksonville
Florida Metals, Inc.
Tampa
Florida Metals, Inc.

GEORGIA
Atlanta
J. M. Tull Metal & Supply Co., Inc.

ILLINOIS
Chicago
Central Steel & Wire Co.
Steel Sales Corp.

LOUISIANA
New Orleans
Metal Goods Corp.

MARYLAND
Baltimore
Whitehead Metal Products Co., Inc.

MASSACHUSETTS
Boston
Edgcomb Steel of New England, Inc.
Cambridge
Whitehead Metal Products Co., Inc.

MICHIGAN
Detroit
Central Steel & Wire Co.
Steel Sales Corp.

MINNESOTA
Minneapolis
Steel Sales Co. of Minn.

MISSOURI
Kansas City
Metal Goods Corp.
St. Louis
Metal Goods Corp.

NEW JERSEY
Harrison
Whitehead Metal Products Co., Inc.

NEW YORK
Buffalo
Bruce-Mueller-Huntley, Inc.
Whitehead Metal Products Co., Inc.
New York
Whitehead Metal Products Co., Inc.
Rochester
Bruce-Mueller-Huntley, Inc.
Syracuse
Bruce-Mueller-Huntley, Inc.
Whitehead Metal Products Co., Inc.

NORTH CAROLINA
Charlotte
Edgcomb Steel Co.

OHIO
Cincinnati
Williams & Co., Inc.
Cleveland
Williams & Co., Inc.
Columbus
Williams & Co., Inc.
Toledo
Williams & Co., Inc.

OKLAHOMA
Tulsa
Metal Goods Corp.

OREGON
Portland
Pacific Metal Co.

PENNSYLVANIA
Philadelphia
Edgcomb Steel Co.
Whitehead Metal Products Co., Inc.
Pittsburgh
Williams & Co., Inc.

TEXAS
Dallas
Metal Goods Corp.
Houston
Metal Goods Corp.

UTAH
Salt Lake City
Pacific Metals Co., Ltd.

WASHINGTON
Seattle
Pacific Metal Co.

WISCONSIN
Milwaukee
Central Steel and Wire Co.
Steel Sales Corp.

HERESITE

REG. U. S. PAT. OFF.

PHENOLIC OIL FREE COATINGS:

Baking Type—Self-Curing Type

Pictured above is a battery of steel tanks which have been HERESITE TREATED on the job site.

HERESITE INDUSTRIAL COATINGS have excellent Chemical Resistance and ability to withstand continuous operating temperatures of 450 Fah. They offer smooth, non-porous, odorless, tasteless and non-toxic surfaces which are readily cleaned, repairable if accidentally damaged and also resistant to thermo-shock.

Installations of HERESITE linings to steel tanks varying in size up to 3-million gallons have been made in the Chemical Industry located in Louisiana, Arkansas, Alabama, Tennessee, Georgia, New Jersey, Arizona, Illinois, Texas, Maryland, New York, Wisconsin; in Europe, Germany and Switzerland.

Field Crews under the leadership of trained personnel backed by fifteen years of experience in HERESITE applications on the job site, are available.

HERESITE & CHEMICAL COMPANY

MANITOWOC, WISCONSIN

BRANCH OFFICE: *327 South La Salle Street, Chicago, Illinois*

STEEL

October 19, 1953

Technical Outlook

SHELL MOLDING YARDSTICK—Improvements in the shell molding process may eventually result in as much as 50 per cent reduction in amount of phenolic resin required for each mold, was the prediction of a Monsanto Chemical official. Currently shell molds contain about six per cent resin by weight. Another prediction: By 1957, process will consume 50 million pounds of resin as compared to 8 to 10 million in 1953.

SHORTCUT—Cast and forged steels of identical composition in low and medium alloy range have comparable hardenability when variations and grain sizes are considered. This type of information, generally out of reach of shops not in position to support organized research, is contained in PB 109459, a publication of the Naval Research Laboratory. Called "The Hardenability of Cast Steel," it's available from Library of Congress.

LUBRICATED HI-SPEED STEELS—Latrobe Steel Co. announces production of high speed tool steels of regular analyses, to which have been added uniformly-distributed sulphide lubricants in a new form. Addition of the lubricant is made practicable by the desegatized process developed by the company several years ago. Called the X.L. series, steels are available in M-1, M-2 and M-10 types and all sizes and shapes in which these types are normally furnished.

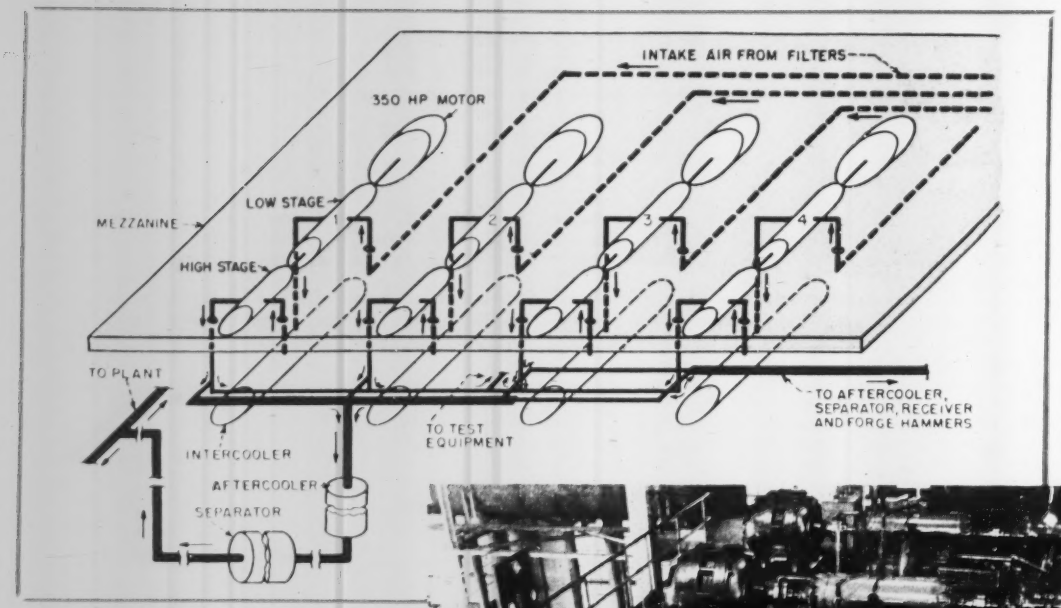
SHOT PEENING TIPS—Findings of a General Motors research project report some interesting conclusions: 1) There's a minimum shot velocity beyond which any additional air pressure is wasted. 2) Exposure time also follows this minimum rule, hence added time is wasted. 3) Shot size influence on fatigue life is slight over full range of pressures and exposure times. 4) Peening increased fatigue life 20 times over non-peened specimens. 5) Specimens peened while under tensile strain showed 200 times the fatigue life of non-peened, 10 times that of strain-free peened specimens. Test pieces were typical automotive leaf springs.

RED RESEARCH—Russia has announced it hopes to produce steels free of phosphorus and sulphur. To study dephosphorization and desulphurization, it's using radioactive isotopes of the two elements.

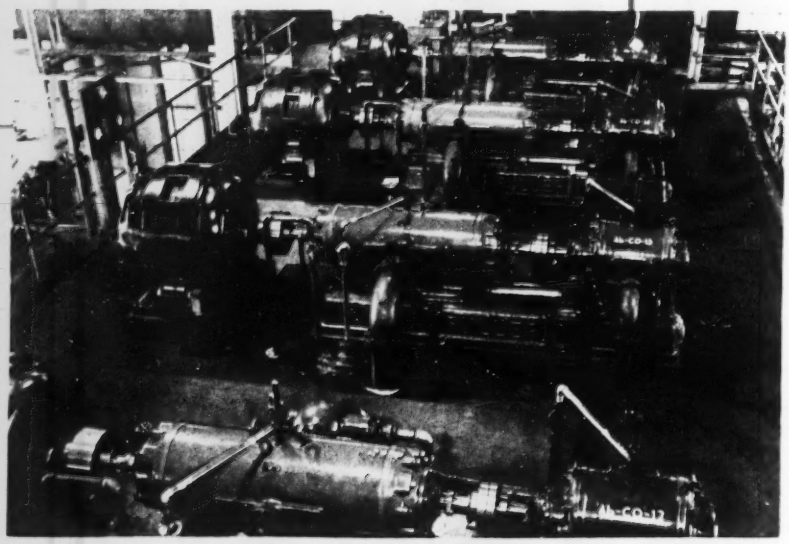
HIGH STRESS PLASTIC—Fluorocarbon plastic material of M. W. Kellogg Co., Jersey City subsidiary of Pullman Inc., is reported to remain transparent indefinitely and survive severe corrosion, extreme temperatures, shock and vibration. Called Kel-F, the plastic's high compressive strength and resiliency permit mounting bolts to be pulled up to leak tightness without immediate or eventual shattering. Current use: Sight glasses on transmission housings for helicopters.

WHAT'S ON THE INSIDE—Color metallography itself isn't new, but in their efforts to solve some of the unknowns, Firth Sterling discovered a new heat tinting technique that opens up the applications. Story and four-color examples are on p. 93 . . . In big plants, air systems can gobble up a lot of working area. American Bridge put their compressors on a mezzanine, with satisfactory results, p. 86 . . . Alcoa is out of the experimental woods with their big Schloeman press in Cleveland. What they've learned is on p. 88 . . . Gas plating of metals has taken some significant strides of late. Story on p. 120 will bring you up to date . . . Burroughs uses small rotary straighteners to speed up production of high-tolerance shafts on p. 97 . . . And big reason for smooth-running Cadillac engine is shrink-fit in the piston assembly. Story on p. 103.

Metalworking Outlook—p. 37 Market Outlook—p. 133



Simplified schematic drawing of two-stage compressors and air lines



Closeup of the four 1660-cfm, 105-psi compressors. The 350-hp driving motors are seen at left. Handwheels, right, control valves under balcony

Compressed Air System Is Spacesaver

By E. P. MEIXSELL, *Manager*
Compressor Department
Fuller Co.
Catasauqua, Pa

Four units at American Bridge have a total capacity of 6640 cfm at 105 psi. Compact two-stage rotary compressors, mounted on a mezzanine, serve 6 million sq ft of plant area

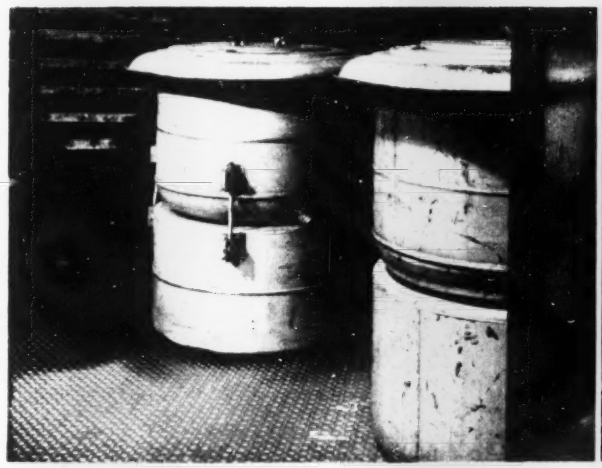
COMPRESSED air system of the American Bridge Division, U. S. Steel Corp., Ambridge, Pa., is a vital utility in the fabrication of structural steel into sections for bridges, office buildings, factories, barges, transmission towers and other large structures. It services a plant having an area of over 6 million sq ft.

The system supplies power for operating riveting, chipping and grinding equipment, forging hammers and such general equipment as air clutches and air-operated clamping devices. Without compressed air, the plant would shut down in short order.

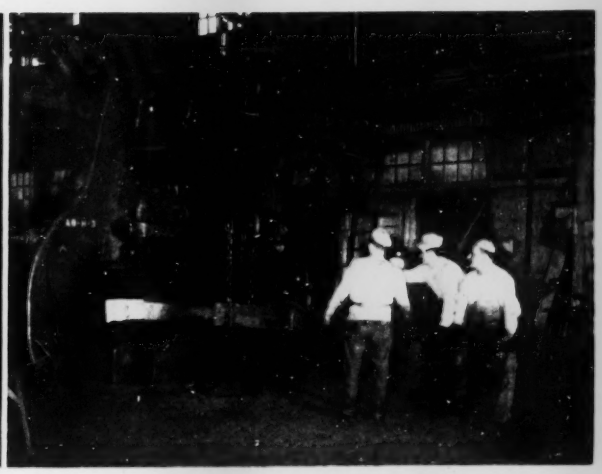
Mezzanine Mounted—To provide this necessary utility, the company operates four two-stage rotary compressors. Novel feature of the installation is that it is mounted on a 16-foot high mezzanine for space-saving reasons as well as insurance against possible floods.

Each of the four compressors is driven by a 350-hp 80-per-cent-power-factor synchronous motor and has a capacity of 1660-cfm free air delivery when compressing to 105-pound gage discharge pressure. Total capacity, therefore, is 6640 cfm.

Filters — Each compressor receives air through individual oil-



Filters are located in an enclosure along power house wall; draw clean air from outdoors through louvers at left. Filters are cleaned weekly when plant is down



This 4500-pound air hammer was formerly operated by high pressure steam. A 428-cu-ft receiver tank services it and other smaller hammers throughout plant

bath air filters which are enclosed in a small room constructed along one outside wall of the power house. Wall is fitted with louvers to permit outside air, rather than plant air, to be drawn into the filters. Outside air, being in constant circulation, generally carries less dust particles than does the inside air. Even in this location filters must be cleaned weekly (Sunday) to be sure that no dust gets through to the compressors.

Air is compressed to about 30 pounds in the first stage and flows through an intercooler to the second stage where it is further compressed to 105 pounds. Intercooler lowers the air temperature from approximately 250°F to approximately 90°F (depending on cooling water temperatures). Intercoolers are suspended below the compressor floor at each unit.

They are equipped with drains for removal of any water which may condense out of the air and collect in the intercoolers. Intercoolers and compressor water jackets each receive cooling water direct from the supply line. That is, water does not flow in series from one unit to the next but flows into each unit and out to drainage.

Aftercoolers — All compressors discharge into a common drain which carries the air through a common aftercooler and oil-and-water separator prior to distribution throughout the plant. The aftercooler brings the air temperature down from approximately 300 F to approximately 70 F. The separator removes any oil and condensate which may carry over from the compressors and aftercooler.

Two of the compressors also are arranged to supply air to an independent auxiliary line which services four forge hammers. This line has its own aftercooler and oil/water separator.

Into the Mains—From the main aftercooler, air passes to a 12-inch main which distributes it to the north and south ends of the plant. General air applications require nominal quantities of air for a given operation, and the piping system alone provides sufficient receiver capacity.

However, air demand of forging hammers is such as to make it advisable to provide a storage "cushion," and a 428-cu-ft receiver is supplied for that purpose. One 4500-pound hammer alone has an 18-inch diameter cylinder x 48-inch stroke. This hammer, incidentally, formerly was operated with high-pressure steam and was changed over to air when the company discontinued generation of high pressure steam.

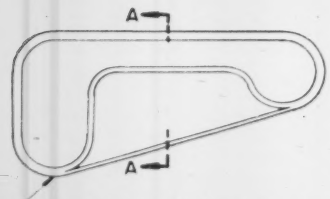
Working Load—Over a 24-hour three-shift period the plant requires approximately 3½ million cu ft of air. Since the hammer load has been added all four compressors are necessary to supply plant needs. Three are set for continuous operation. Output of the fourth is regulated automatically with the compressor unloader set to cut out once 105-pound pressure has been reached in the system. For two years during the war all four units were operated 24 hours a day, seven days a week.

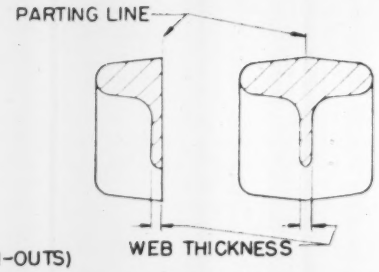
Present compressor installation dates back to 1940 at which time worn out reciprocating units were replaced. Since that time, except for periodic cleaning and lubrication, the only maintenance has been occasional replacement of bearings and replacement of worn blades about every four years.

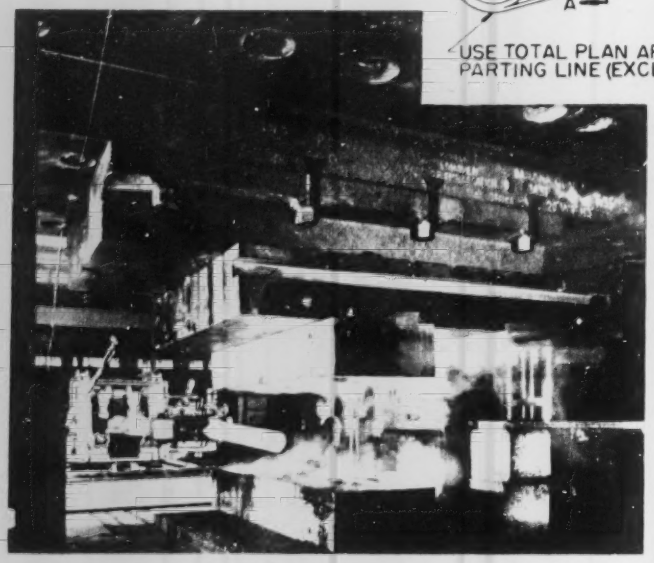
Advantages — Having no reciprocating motion, the rotary type of compressor operates without vibration and hence does not require heavy foundations. This factor enabled American Bridge to install these compressors on a mezzanine rather than using main floor space. Also, the installed cost was about 25 per cent less than that of other compressor types.

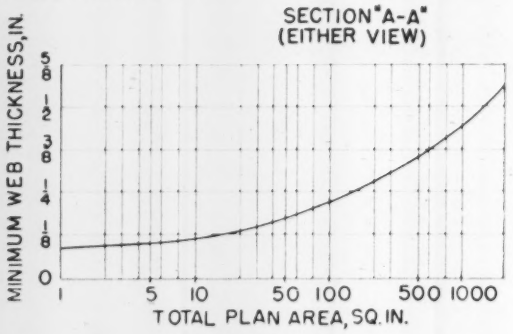
While initial over-all efficiency is a little lower than that which can be obtained with other machines, the inherent ability of this type of unit to maintain its rated capacity, coupled with lower installed cost and lower maintenance costs, more than compensates for this factor.

Drawings show minimum web thickness of aluminum die forging based on parting line areas. Proportions are for hammer fabrication of large airframe forging. However, for general purposes, proportions are reduced about 25 per cent for hydraulic press work









Draft angles have been reduced from 7 degrees to 5 to 3 degrees in use of Schloemann press. Most important reason: Knockouts in the dies

Heavy Press Operation Takes Shape

Progress is being made in forging large aluminum parts on the 15,000-ton Schloemann press. Products have surface quality, dimensional uniformity, thinner webs and ribs

By A. V. FAVRE
Chief Production Engineer
Aluminum Co. of America
Cleveland

TECHNIQUES for forging large aluminum parts on the 15,000-ton Schloemann press have progressed from the experimental to the operational stage during the past year.

More than 30 different parts, involving some 5 million pounds of metal, have been forged on the heavy press at Aluminum Co. of America's Cleveland works.

Their conclusions: In general, results obtained have been encouraging from the standpoints of surface quality, dimensional uniformity, reduction of required draft angles, ability to produce thinner webs and ribs and increased die life. No improvement over hammer forgings has been noted in mechanical properties and metallurgical quality.

Surfaces—Surface quality has been characterized by greater smoothness, freedom from laps, folds and other defects that must be chipped out between hammer operations or ground out and polished in final inspection.

Reason is that forging is blocked or finished in a single stroke of the press. Small abrasions and slivers, developed by repeated hammer blows which never hit twice at the same place, are avoided.

Dimensions—Uniformity from forging to forging exceeded expectations. Dies are designed to come together, although they may not do so in hydraulic press operations. But a high degree of uniformity in total and unit pressure exists. If temperatures, dwell and lubrication are accurately controlled, dimensional uniformity should be good. Control, of course, is not always easy.

Draft Angles—In hammer forging practice, draft angles of 7 degrees are standard, while they can be reduced easily to 5 to 3 degrees in press forging. Most important reason is ability to incorporate knockouts in dies. This is not practical in hammer dies.

Thinner webs and ribs seem to be in the cards for forgings made on presses. Reduced draft angles are partially responsible for such improvement. Other contributing factors include superior lubrication, higher die temperatures (not practical with hammer dies) and dwell under pressure.

Webs, Ribs—Reduction and con-

trol of required unit forging pressures are mandatory to produce forgings of relatively large area which have thin web sections and narrow ribs to fairly precise dimensions. It is misleading to assume extremely high pressures will produce a complex forging in any size.

No amount of pressure will cause metal to flow if conditions are not right; and no press, however powerful, will produce a thin web panel if forging and dies are improperly designed.

Secret lies in proper forging design, proper die design and proper production practices. Over-all objective is reduction of necessary unit pressures to absolute minimum required.

Design—Piece about 35 in. sq, requiring 40 tons per sq in. to make, can be produced on a press with a capacity of 50,000 tons. But reduction of pressure to 15 tons per sq in. by skillful design and fabricating practices, press can make a panel about 30 x 100 inches. In terms of capacity, 50,000-ton press is equivalent to 150,000 tons in this instance.

Designers can help in several ways. For example, thin ribs, particularly boxed-in sections, tend to freeze between die surfaces and create enormous resistance to flow and, consequently, build up excessive die stresses. If relief can be given by providing punch outs, excess metal is given some place to flow. This makes a thinner web possible and greatly reduces required pressure. If a punch out isn't possible, designer can arrange rib disposition to avoid completely boxed-in sections and trapped metal.

Other responsibilities of the designer include determination of number of blocking dies and design impression in each, decide upon type of original stock or preformed shape and provide for gutter and flash design and flash removal.

Character of die surface has a large effect in reducing or increasing resistance to metal flow. Properly polished dies are helpful. In fact, plating may be warranted where practical.

Production—Again, over-all objectives are to promote smooth flow of metal and keep unit pressures to a minimum. Temperature of stock, temperature of dies and lubrication of dies are major considerations.

Generally speaking, the hotter the die, the lower the flow resistance; but two other problems crop up. One is die lubrication; the other is maintenance of dimensional tolerances. In the end it comes down to a proper balance of many factors that can be determined only by experience.

To date, thin sections, such as those contemplated for integrally stiffened wing panels, are not considered possible as forged. Thin sections of this type from 0.060 to 0.120 inch can be made only by subsequent machining. When speaking of thin web sections as forged, Alcoa means sections from about 0.140 to 0.225 inch. Former has not been achieved, but some webs have been produced without punchouts at 0.080 inch in rather heavily restricted sections up to about 100 sq in. in area.

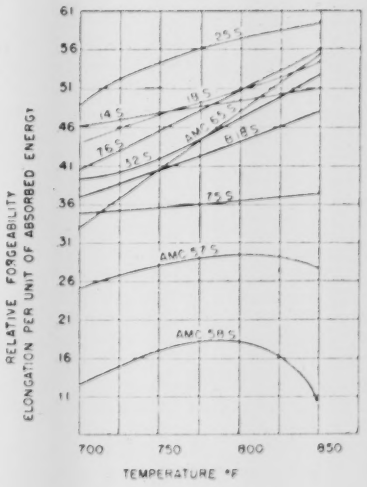
Die Life—Experience with die life at Alcoa during the past year on the 15,000-ton press has been outstanding. But this may not be representative of what to expect in the future. There have been no major die failures, although a large, hard-plate holder was broken because of an operating error. But since few jobs have been produced in substantial volume, die mortality record cannot be taken as an index of future experience.

Adapted from a paper presented before the recent semi-annual meeting of the American Society of Mechanical Engineers at Cleveland

STANDARD DIE CLOSURE TOLERANCES

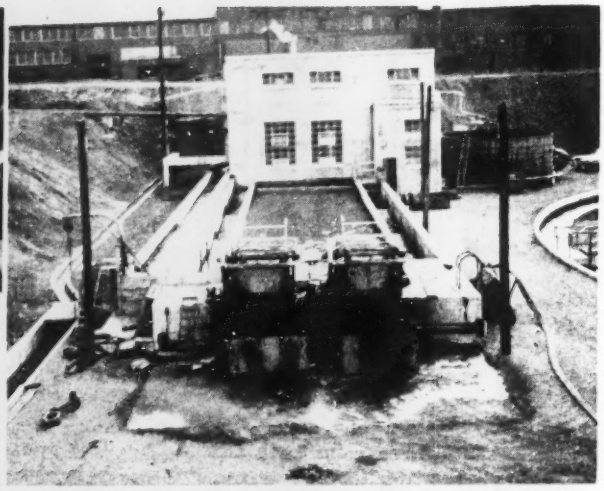
MAGNESIUM NET WEIGHT OF FORGING, IN LBS.		ALUMINUM NET WEIGHT OF FORGING, IN LBS.		DIE CLOSURE TOLERANCE, IN INCHES	
FROM	TO	FROM	TO		
0	¼	0	¼	+ 0.032	- 0.010
¼	1	¼	1	+ 0.032	- 0.015
1	3	1	4	+ 0.045	- 0.032
3	11	4	17	+ 0.062	- 0.032
11	16	17	24	+ 0.078	- 0.032
16	33	24	50	+ 0.093	- 0.032
33	67	50	100	+ 0.125	- 0.045
67	170	100	250	+ 0.187	- 0.062
170	—	250	—	+ 0.250	- 0.062

Figures are for airframes produced on hammers, but hammer and hydraulic press methods have factors in common. Length and width tolerances require control of stock volume, temperature, die temperature, lubrication and surface condition of dies and closures



Relative formability of aluminum alloys: Curves were obtained through measurement of deformaton of specimens with known energy absorption or through testing impact specimens at modified temperatures. The normal forging temperature is generally about 800° F

Mill scale is removed by water spray as it emerges from the roughing rolls. The scale and water are reclaimed



Collectors in oxide concentration tank remove scale from 13,000 gpm of cooling water in about 8 minutes

Making Mill Effluent Pay Off

Five-point saving includes recovery of high-iron-content scale, re-use of water, prevention of stream pollution and reduction of maintenance and scale removal costs

By R. W. SIMPSON and WILLIAM GARLOW
Chief Sanitary Engineer *Sanitary Engineer*
Gilbert Associates, Inc
Reading, Pa.

SEDIMENTATION basins are being used to advantage in the recovery of mill scale and cooling water.

Economies realized by reclamation of high-iron-content scale and re-use of clarified water are joined by three other desirable controls: 1. Prevention of stream pollution. 2. Reduction of maintenance costs, especially clogging sewers and 3. Decrease of labor cost in removal of mill scale.

Typical systems include a rectangular basin whose effluent passes through a circular settling unit and two or three tank parallel units.

Type One—Steel mill in the east recently installed sedimentation basins to recover scale produced in strip mill operations. Cooling water contained iron oxide and oils.

System was designed to handle 13,000 gpm. It consists of a rectangular basin (74 feet by 20 feet, with water depth of 12 feet) and a circular settling unit (125 feet in diameter with water depth of 13 feet). Oil removed by both is disposed of in a lagoon.

Detention time in the rectangular basin is 8 minutes, and only large pieces of heavy scale are removed here for reprocessing and re-use in the mill. Effluent from this basin passes through the circular settling unit, which has a detention period of 1 hour at design flow. Its effluent is recirculated back into the mill by pumps for re-use as cooling water. Make-up water is added as needed.

Conveyors—Rectangular unit is equipped with flight-type conveyors, which drag settled scale along the horizontal bottom, then up the inclined end of the tank. Mechanical flight wiper is provided on end of incline to assure discharge of scale into boxes for its easy removal by truck.

Circular unit is cleaned (when strip mill is down for regular maintenance) by use of portable pumps that move fine scale to lagoons. No attempt is made to recover the fine scale due to particle compaction.

Two Tanks—Two-tank parallel unit is used by another plant to handle scale found in cooling water. Flow in system varies from 0 to 850 gpm, with maximum of 850 gpm being maintained when all units in the mill are in operation. System was designed to handle maximum flow with a 2-hour detention period.

Each tank will accommodate 450 gpm with 2 hours detention. Dimensions of each are 55 feet by 12.5

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(ANSWER NUMBER 1)

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A mule is a hybrid

So is a CERMET

A CERMET is what scientists the world over want—a hybrid material, like the mule, but possessing in combination all the best characteristics of several materials which by themselves cannot fill the demands of twentieth century technology.

In the forefront of the race for the jet-era hybrid is a CERMET. A mule of materials, CERMET results from mating a ceramic material with a metal. Thus, the name CERMET. Its physical characteristics are such that research men *everywhere* are striving for its perfection.

You see, man has reached a point where advancement in some directions is limited by the "survival" characteristics of existing materials. Jet propulsion, for example, may soon be stymied by the disintegration of available materials under high stress. Involved in this modern-day trial-by-fire are such technicalities as catastrophic oxidation, thermal shock failure, non-resistance to impact and "creep"—which is elongation under high temperature and stress.

Firth Sterling is now producing CERMETS for *many* applications!

But, mule-like, CERMETS have some stubborn little characteristics which must be "bred out" before the ultimate "wonder" hybrid emerges. We are sure it will emerge from blue-ribbon breeding . . . because Firth Sterling stands for metallurgical achievement . . . past, present and future.

PRODUCTS OF FIRTH STERLING METALLURGY

High Speed Steels
Tool & Die Steels
Stainless Specialties
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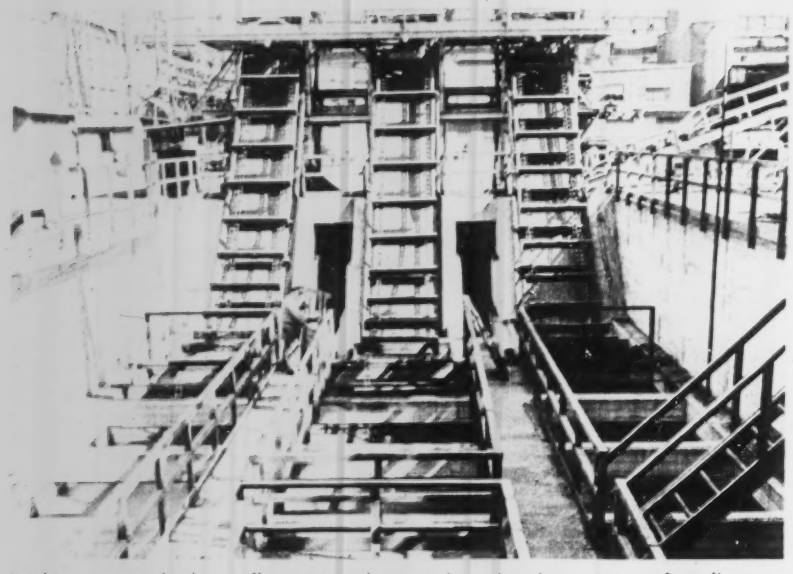
Sintered Tungsten Carbides
Firth Heavy Metal
Chromium Carbides
High Temperature Cermets



Looking toward the influent trenches and inclined sections of collectors.

feet with water depth of 10 feet. Each is equipped with flight-type conveyors to drag scale along the bottom, up a 30-degree, inclined plane, then discharge it into buckets at the end of the inclined plane.

Scum skimmers are installed at the effluent end of both tanks to remove oil. Oil is disposed of on a sand bed which is ignited periodically for burn-off.

Water — Clarified water is pumped back into the mill for re-use in the cooling system from a sump and storage tank, with make-up water added as needed. Scale recovered is sold for re-use.

Using Stokes law, calculated particle size settled out in this unit is 0.005 mm. In operation it is not expected to reach this small particle size, but it is anticipated that clarified water will be of better quality than water used originally.

Three Tanks—At another plant, three concrete tanks are used in parallel. Each is 10 feet wide at top, 5 feet wide at bottom, with water depth of 9 feet, 6 inches. Each is 69 feet long, with an inclined discharge end.

Flakes of steel knocked off by high-pressure water sprays as strip emerges from mill range in size from about a nickel to finely ground coffee. Scale is 72 per cent pure iron, with each ton being the equivalent of 1½ tons of ore.

Units are 87 per cent efficient. Flight conveyors are installed to drag scale along bottom, up an inclined plane, then discharge it into a conveyor belt, which carries scale to railroad cars.

Adapted from a paper presented at the recent Industrial Treatment Conference at Purdue University, Lafayette, Ind.

Two Link-Belt collectors are used in oxide concentration tank in foreground

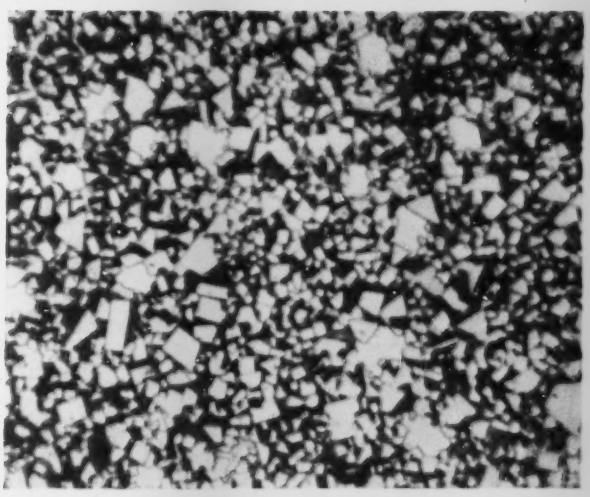
Color Shows Up the Unknown in Metallography

Heat tinting is key to color examination of carbide mixtures. Each constituent and phase can be identified. Opens up new avenues for studying structure-property relationship

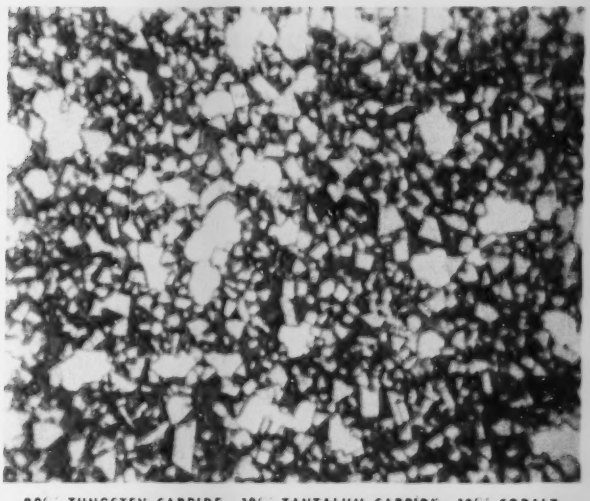
By J. H. POWERS and W. J. LOACH
Chief Metallographer *Manager*
Powder Metals Research, Firth Sterling Inc., Pittsburgh

METALLURGISTS who explore structure will tell you that the most rewarding distance between a problem and its solution generally isn't the proverbial straight line. Often as not, new frontiers are opened up by getting side-tracked along the line.

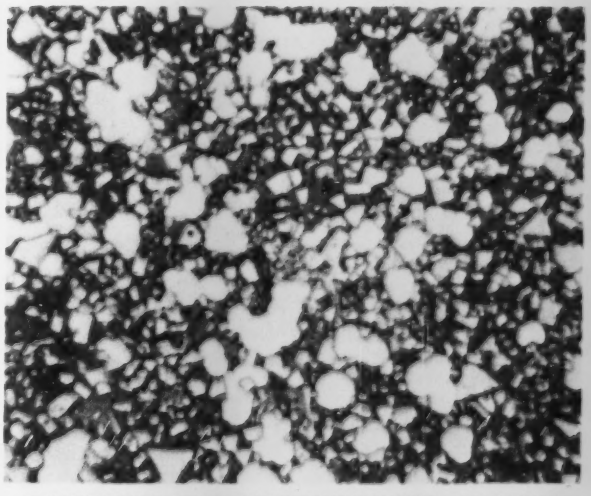
Researchers at Firth Sterling Inc. have a case in point. When ordinary color metallography didn't show them all they wanted it to about sintered carbides, they stuck to the job and came up with a heat tinting technique. Now each constituent and phase present in multicarbide mixtures can be identified in color photomicrographs at 1500 diameters.



85% TUNGSTEN CARBIDE—5% TANTALUM CARBIDE—10% COBALT

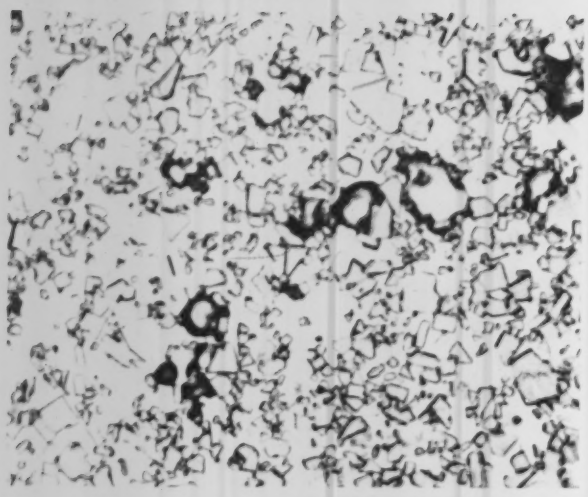


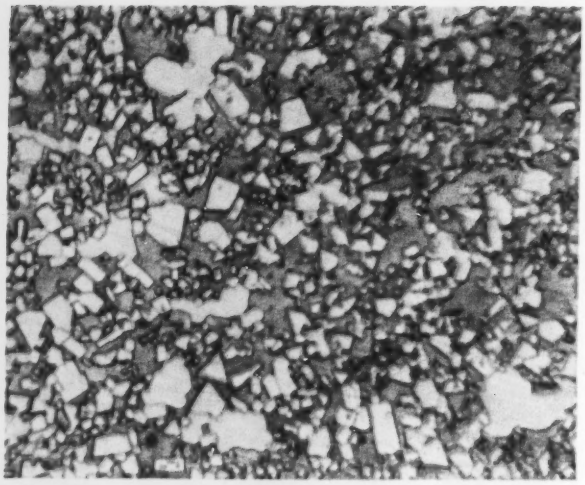
80% TUNGSTEN CARBIDE—10% TANTALUM CARBIDE—10% COBALT



70% TUNGSTEN CARBIDE—20% TANTALUM CARBIDE—10% COBALT

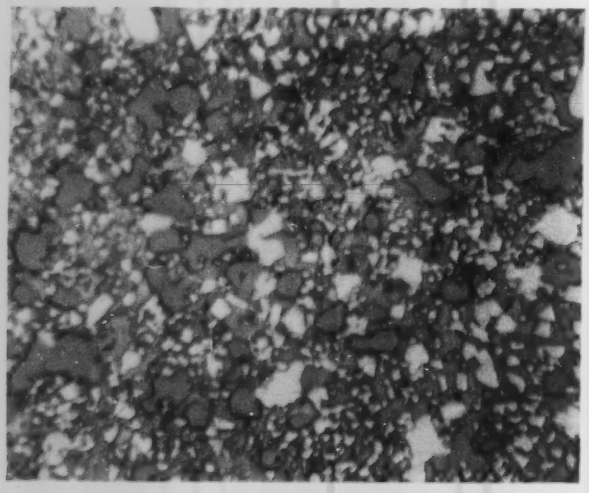
Heat-tinted samples of mixed carbides permit identification of constituents. Tungsten carbide grains are grey, tantalum carbide areas yellow, cobalt matrix blue.

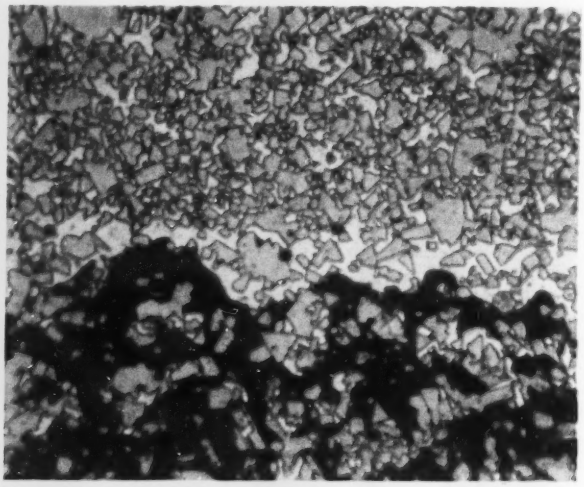




70% TUNGSTEN CARBIDE—5% TANTALUM CARBIDE—25% COBALT

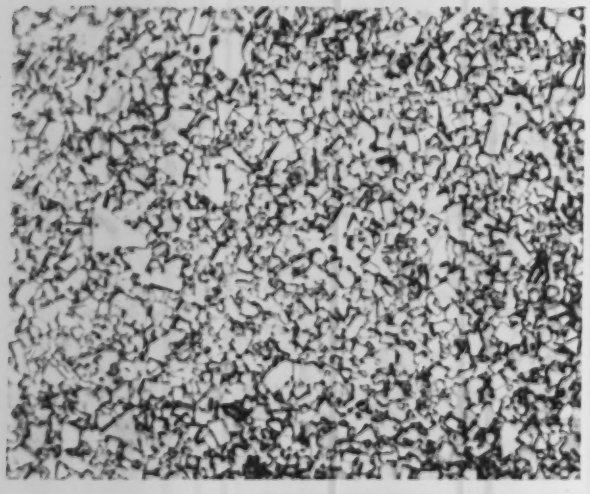
Mixed carbides before and after heat tinting. Tungsten grains are grey; tantalum areas yellow; cobalt matrix blue.

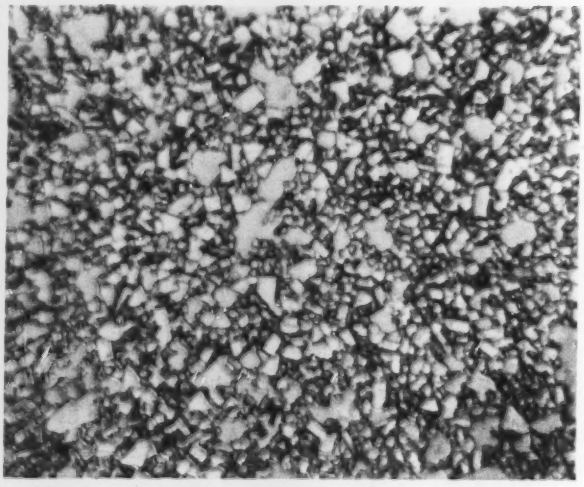




70% TUNGSTEN CARBIDE—5% TANTALUM CARBIDE—25% COBALT

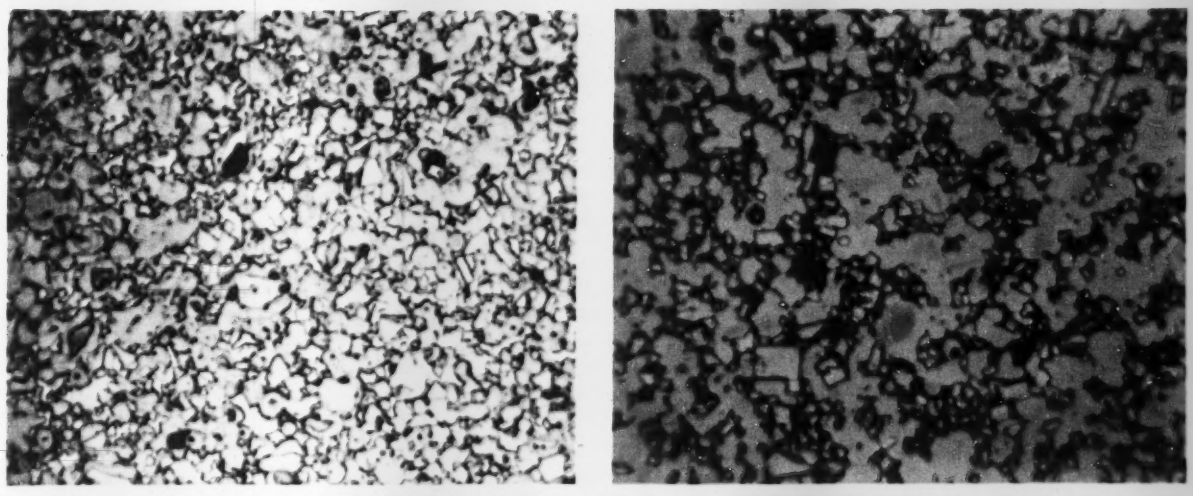
Sintered carbides showing brown eta phase (left) and deep purple eta phase (right) formed by carbon deficiency.





86% TUNGSTEN CARBIDE—4% TITANIUM CARBIDE—10% COBALT

Mixed carbides after heat tinting. Solution areas (tungsten carbide plus titanium carbide) are tan.



76% TUNGSTEN—16% TITANIUM CARBIDE—8% COBALT

Mixed carbides before and after heat tinting.

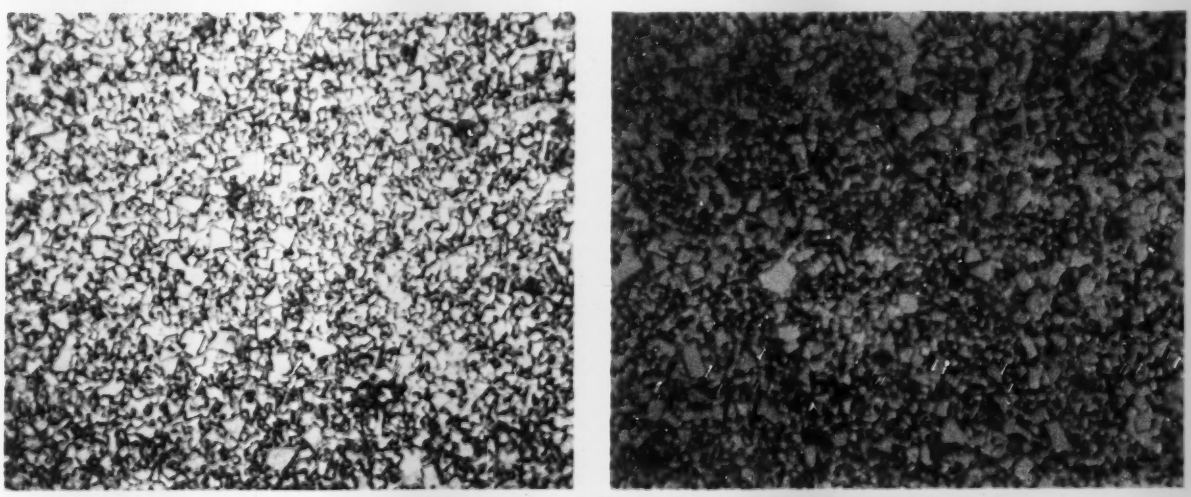
Double Score—Pay off has been on two counts: Straight quality control of carbide cutting tools and research on development of new carbide compositions. There's promise that the technique will clear up some of the reasons for unpredicted failures of cermet type jet engine blades. Objective here is to correlate physical properties with heat tinted structure in much the same way as is being done for cutting tools. Heat tint color photo approach a' may shed new light on high temperature tests by revealing changes in crystal-orientation of metals during creep.

Color metallography with and without polarized light, while not new, is just now coming into its own. One big reason: Availability of color film which can be processed in the average laboratory. It remains for the metallographer to develop methods for surface preparation to take advantage of color examination. Here's how it's done at Firth Sterling.

Polish First—Specimen is first ground flat on a surface grinder using 120 grit diamond wheel. Next it is polished on lapping wheels impregnated with diamond powders of various sizes. The first polishing wheel is impregnated with diamond powder 20 to 10 microns in size to remove grinding marks made by 120 grit diamond wheel.

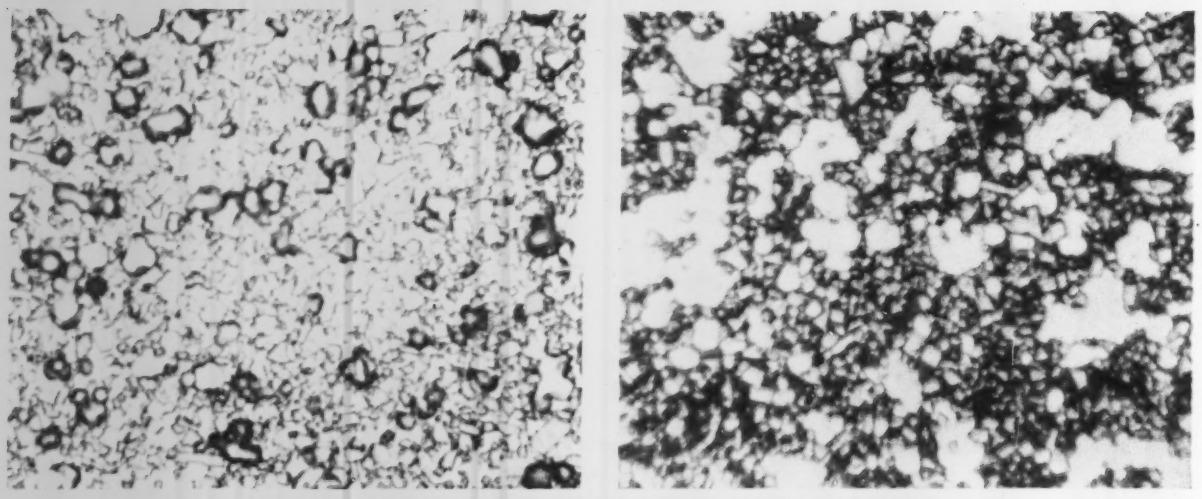
Specimen is then lapped on a series of wheels impregnated with diamond powder 5 to 10 microns, 1 to 5 microns, and 0 to 2 microns. Between each lapping operation the specimen is rotated 90° to remove last traces of polishing scratches.

Etch And Heat—Polished sample is electrolytically etched with a 5 per cent solution of sodium carbonate and rinsed. Next the specimen is heat tinted by putting it in a muffle furnace at 900° F for about 5 minutes. This causes the various phases to take on characteristic colors which can be photo-



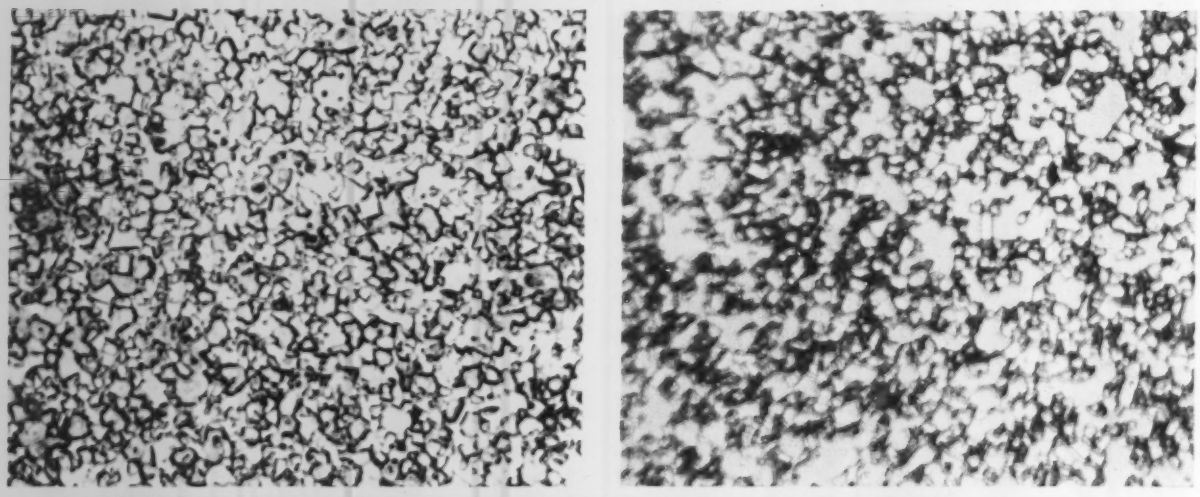
90% TUNGSTEN CARBIDE—3% TANTALUM CARBIDE—6.5% COBALT

Mixed carbides before and after heat tinting. Tungsten grains are grey, tantalum areas yellow, cobalt matrix blue.



60% TUNGSTEN CARBIDE—28% TANTALUM CARBIDE—12% COBALT

Mixed carbides before and after heat tinting. Tungsten grains are grey, tantalum areas yellow, cobalt matrix blue.



72.5% TUNGSTEN CARBIDE—10% TITANIUM CARBIDE—8% TANTALUM CARBIDE—9.5% COBALT

Multicarbide before and after heat tinting. Solution areas (tungsten carbide-titanium carbide-tantalum carbide) are tan.

graphed in color. Exact time is governed by composition and size of sample.

Kodak Ektachrome Film, Daylight Type, is used to photograph the microstructure. Illumination used is a 220 volt, dc motor driven, 10 amp carbon arc lamp. C. S. Foster, Eastman's photomicrographic expert, worked closely with Firth Sterling's metallographers in developing proper picture taking methods.

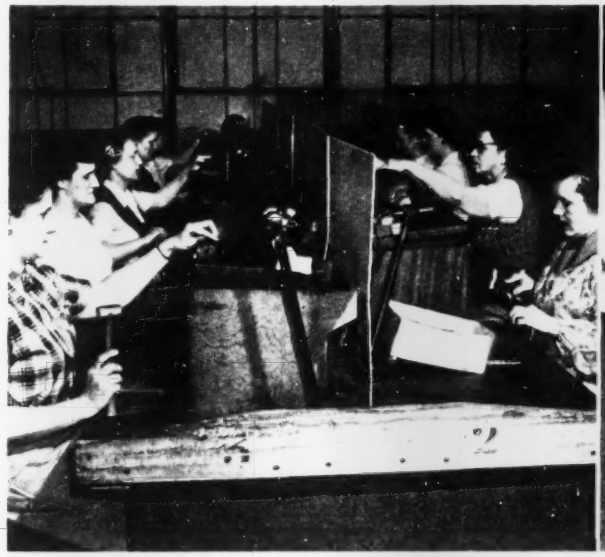
Check These—Complete control of the carbon arc is absolutely necessary to maintain the color temperature of illumination. This is done using primary and secondary voltmeters with an ammeter in the secondary circuit. Color film is balanced to utilize the near ultraviolet radiation in the spectrum of the illuminant.

Different glasses in lens components act differently as ultra violet filters. The fluorite apochromatic objectives of high power are a large variable. Often, absorption extends into the visible blue region of the spectrum and produces a marked yellow cast in the picture. Illuminant is corrected by filters to overcome this.

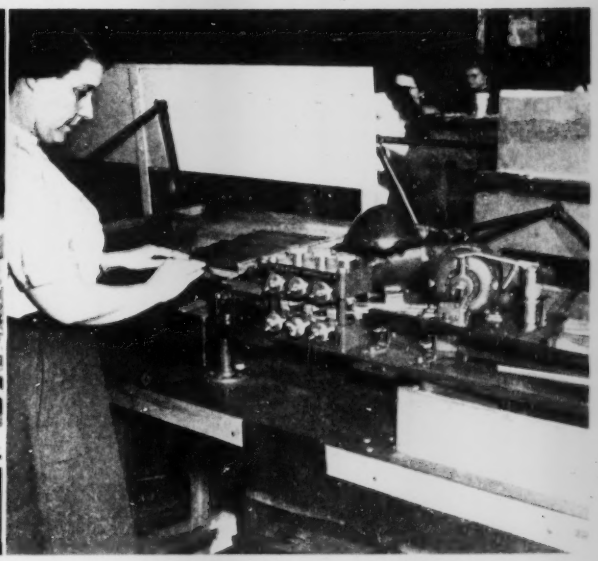
A 2 per cent solution of sodium nitrite is added to the water cell to filter out excess ultraviolet radiation. A photometric filter 78C and a Kodak color compensating filter 30B are added to saturate the blue areas in the transparency. A .10M color compensating filter is added to correct the green cast in the blue areas caused by the introduction of the blue filters. Exposure time is about 2 seconds.

Real Evidence — Metallographs in black and white compared with color, shown in these pages, illustrate advantages of the heat tint color photo method. In a basic mixture of tantalum carbide, tungsten carbide, and cobalt, tantalum carbide areas are yellow, tungsten carbide grains are grey and the cobalt matrix is blue.

In carbide structures containing titanium carbide, the tungsten carbide plus titanium carbide solution areas are tan. Undesirable eta phase can be readily detected.



OLD method involved hammering on linoleum blocks with soft metal mallets. It was a tap-and-check operation until each shaft would roll under the measuring bridge



NEW rotary straightener handles 1200 shafts per hour instead of 93 by the hand method. This leaves more time for straightening shafts too small for automatic cycle

Rolls Straighten Out Shaft Shortage

Production was lagging at Burroughs and bottleneck turned out to be shaft straightening. Hand hammering method gave way to rotary machines, and output soared

SWITCHING from manual to machine straightening of small diameter soft and case hardened steel shafts resulted in a twelve-fold increase in production of these parts at Burroughs Corp., Detroit.

The shafts, varying from 1/16 to 3/16 inch in diameter, and from 6 to 18 inches long, serve various purposes in the operating mechanisms of Burroughs adding machines and other computing devices. Eight-foot raw steel stock, which is not within tolerances for machining, also is processed for straightness.

Shaft straightness is a critical factor, because any binding or out-of-alignment of gears and connectors in these intricate mechanisms would not allow them to function properly.

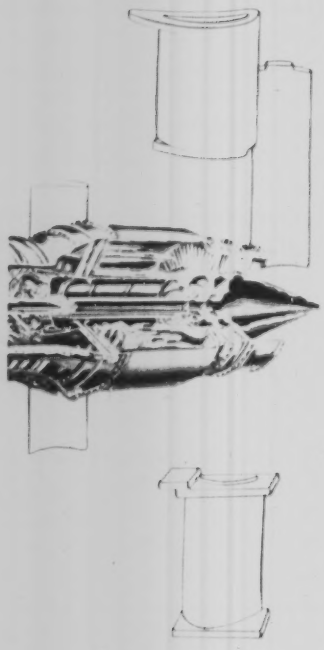
Old Way—Shafts used at Burroughs must meet specifications that limit deviations from perfect straightness to within 0.003 to 0.005 inch per shaft. Maintaining this tolerance by manual bench straightening was a tedious and time-consuming operation, which consisted of hammering each shaft on a linoleum block until it was straight enough to roll under a measuring bridge. Output with this method averaged about 93 shafts an hour.

Slightly more than a year ago production began to lag behind rising sales. Management decided it was time to mechanize this straightening operation. A Model AYZ rotary straightener, made by Mackintosh-Hemphill Co., Pittsburgh, was installed in the shaft department.

Speed Up—After a short indoctrination, women operators of grinders, buffers and plate straighteners in this department were capable of operating the new machine as needed to speed-up production. With the rotary straightener taking over the major job of straightening, production in this department has jumped from 93 to 1200 shafts an hour an increase of about 1200 per cent.

Straightening and checking each piece is automatic. A girl feeds the shafts into the six driven straightening rolls of the Model AYZ. Steel shafts then drop onto an inclined surface plate and roll under a measuring bridge. Rejects are returned to the straightening benches for inspection and removal of any stubborn curvature and bends.

This increase in output is all the more important when consideration is given to the fact that the equipment maintains straightness tolerance on case-hardened shafts within the specified 0.003 to 0.005 inch maximum deviation per length.



Oddly enough, the metal fabricating process first used to produce cobalt-chrome dentures helped put the "bite" into World War II bombers. The tiny power blades in the turbo-superchargers of high-flying B-17's and B-29's that provided extra speed and longer range were precision cast from high-temperature alloys by the unique Microcast Process.

Originated in 1929 by Austenal Laboratories, Inc., to cast non-machineable alloys, the Microcast Process today is used to produce parts and components from a wide range of ferrous and non-ferrous metals.

The Microcast Process offers exceptional opportunities in the mass production of parts and components. Product improvement through the use of better alloys, economies through the elimination of expensive machining operations, and greater freedom of part design are only a few of its advantages. Investigate Microcast today . . . it may well be the means of a better product at lower cost for you.

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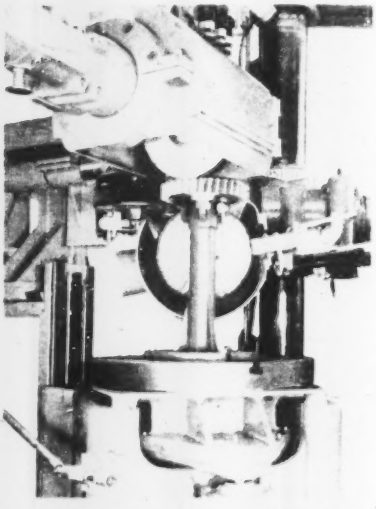
Brush Deburrer Is Speedy

Two new machines are turning out up to 10 times the work of previous hand methods

NEW POWER brushing methods for removing burrs and blending surface junctures and other finishing jobs of large or heavy work pieces have been developed by the Osborn Mfg. Co., Cleveland.

Using these new Osborn methods for deburring and blending surface junctures, one jet engine manufacturer realized 10 times the work output. Finishing a 37½-inch diameter speed reducer gear by hand required 32 minutes. On the No. 5 brushing machine the job was completed in 3 minutes.

Hand Work Out — These new methods take the time consuming



Two treated tampico brushes finish top and bottom; wire brush hits profile

hand work out of burring and finishing large parts. The operation of the brushing machines are easily learned, and an unskilled operator can attain high-quality, rapid production quickly.

On the No. 5 brushing machine, entire job of the operator is placing the work piece on the turntable. His job is complete until the work is brushed and ready to be removed. As the brushed gear is removed, an unfinished gear is placed on the turntable, and so on. A pre-set timer retracts the brushing heads and motion is stopped until again actuated by the operator.

The amount, direction and quali-

U.S. ZINC CONSUMERS... *which would you prefer?*

A brief study of these curves showing domestic slab zinc production in its relation to imports reveals some facts of interest to every consumer: In periods of greatest necessity, imports of zinc are at their lowest, as for example in 1948 and 1951. Conversely, when there is an abundant supply, imports are at their highest level. As a result, prices decline and domestic zinc production is discouraged – *production which may be vitally needed on very short notice.* As a matter of fact, the alternate withholding and flooding of the domestic market with foreign zinc has been responsible for some of the wide fluctuations in the domestic price which is so disturbing to the American consumer.

The price concessions offered by importers in easy markets rarely offset the premiums or inconveniences caused by lack of availability of the same metal in tight markets. Furthermore, many grades of imported zinc are not comparable in quality to primary domestic brands produced to A.S.T.M. specifications. In other words, it is not a question of dollars and cents alone.

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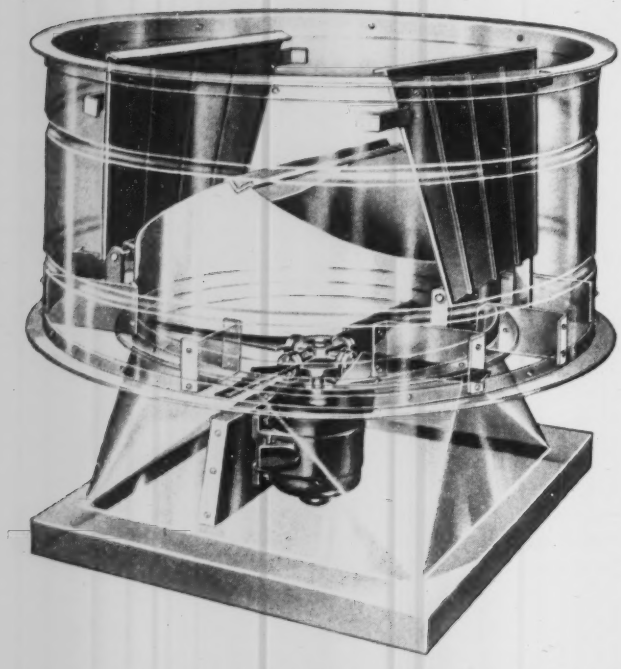

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THE BURT F. E. F. POWER VENTILATOR CAN SUPPLY IT!

The advanced design of the Burt F.E.F. (Free Exhaust Fan) Ventilator provides new higher capacities for rapid localized removal of air contaminated by smoke, fumes, dust and heat. Its features include:

UNOBSTRUCTED EXHAUST—Absolute free opening channels an unrestricted column of air vertically upward at high velocity.

BURT AXIAL FLOW FAN—Burt airfoil design developed specifically for the rapid removal of air, not "just another propeller". Provides a high volume of air delivery with efficiency and economy.

COMPLETELY WEATHERPROOF—Two dampers open wide in operation, close automatically to thoroughly weatherproof unit when fan is shut off.

CAPACITIES TO 75,500 C.F.M.—Seven sizes and seventeen motor choices provide capacities from 5,000 C.F.M. to 75,500 C.F.M. See Sweet's for complete data or write for Bulletin SPV-13.

FAN & GRAVITY VENTILATORS • LOUVERS • SHEET METAL SPECIALTIES

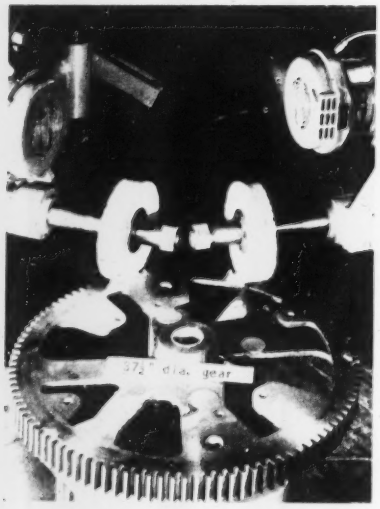
The Burt Manufacturing Company

905 S. High St., Akron 11, Ohio

ty of brushing each gear receives depends on the type of gear, metal, surface desired and type and methods of application of the brushes. Operator simply loads and unloads. All other operations can be predetermined and pre-set.

Speed and Quality—Production increases resulting from these new developments are of major importance. Yet, they may be considered secondary, when the quality of the finished work is discussed.

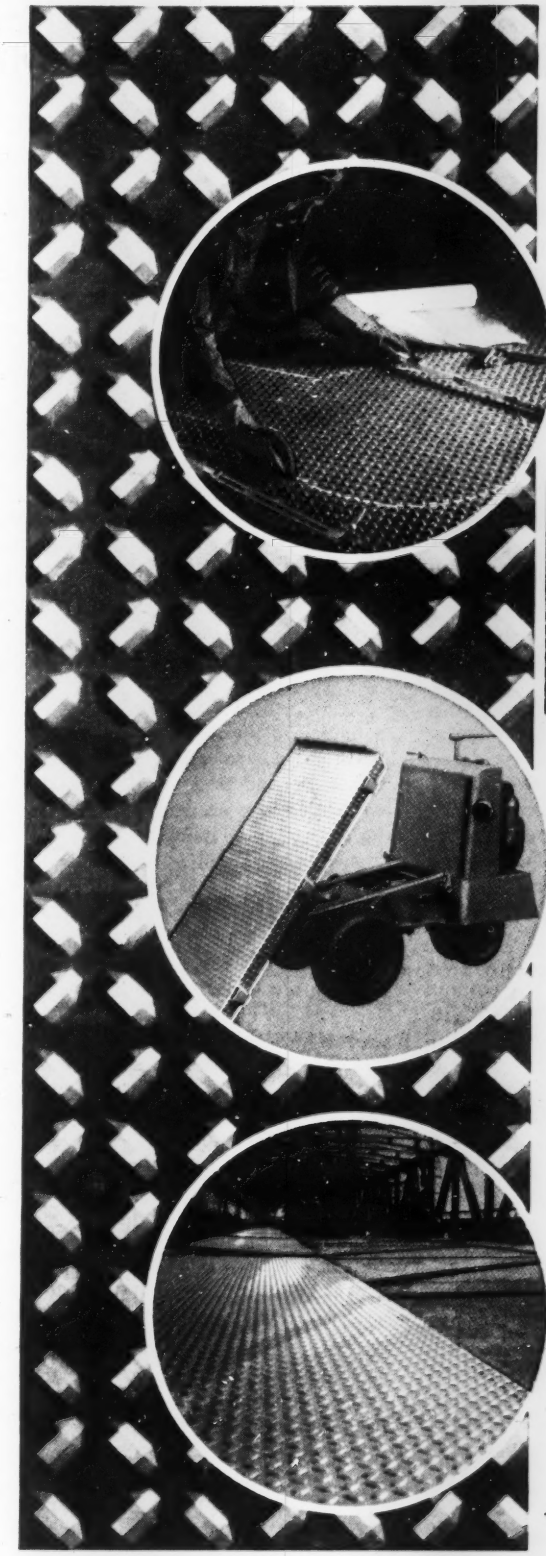
It is believed that the primary cause of many of the troubles of well designed machine parts, such as used in jet engines are stress



Osborn No. 5 brushing machine, with guards removed, burrs and blends surface junctures of the 37½-inch speed reducer gear in only three minutes

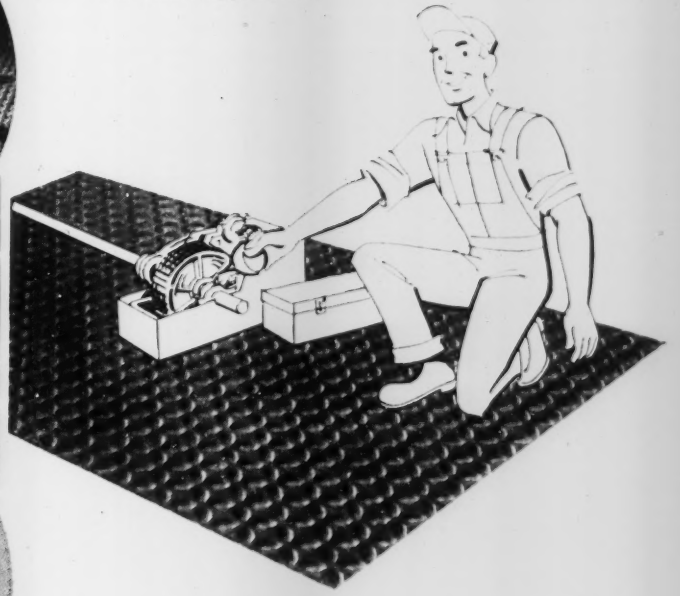
concentrations and resulting progressive fractures. Some investigators have presented data to show that a sharp corner or edge may reduce the endurance limit of a part as much as 50 per cent. This strength reduction is traceable to the concentration of stresses at tool marks, scratches, sharp edges or burrs. Small microscopic cracks start at these points; with continued repetition of stress, the whole member may rupture.

Brushing blends tool and grinding marks and helps reduce the number of potential starting points for small cracks. These small cracks may not cause complete fracture, but will result in small burrs and metal breaking off that will foul the lubrication system and cause unnecessary wear in the gears.



He works around fast-moving gears,
He cannot risk a slip . . .
So, for sure footing through the years
He walks on Multigrip.

Multigrip adds structural strength,
Makes a permanent installation . . .
And it's made in extra width and length
For easier application!



REDUCE ACCIDENTS. U S S Multigrip Floor Plate helps cut down accidents—and resultant lost manhours—caused by slips and falls. The scientifically designed risers of Multigrip are spaced so that many of them grip the foot at all times, regardless of how the plate is approached.

The symmetrical pattern of Multigrip allows neat, continuous installations and keeps cutting waste to a minimum. For permanent, safe installations, use Multigrip on steps and platforms of machinery, for runways, ramps, entire factory floors . . . wherever sure footing is essential.

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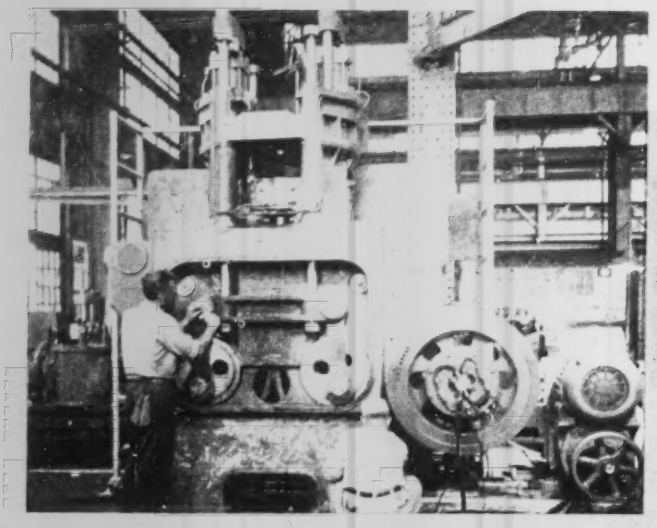


Baldwin 100-ton compacting press is shown being readied for testing and showing at Metal Show. First one goes to Precision Grinding Wheel Co

Biggest Press For Powder Metals

That's Baldwin-Lima-Hamilton's claim for their 100-ton mechanical compacting unit. Crank-type machine is capable of producing close tolerances even in flanged parts

A 100-TON mechanical compacting press for metal powders, said to be the largest of its type ever attempted, was built by Eddystone Division, Baldwin - Lima - Hamilton Corp., Philadelphia.

Scheduled for unveiling at the National Metal Exposition in Cleveland this week, the four-column, crank-type, mechanical press lends itself to producing parts, including flange types, to the closest of tolerances.

Press operates mechanically, but pressure applied to the material is hydraulic and can be adjusted to any capacity up to 100 tons. Dies with outside dimensions of up to 10-inch round or 5 x 10-inch rectangular can be accommodated.

Sensitive—Feature that distinguishes it from cam-type presses is provision for making accurate adjustments while press is in operation, to allow for changes in density or weight.

Another improvement, says Byron Belden, application engineer in charge of building the unit, is incorporation of built-in press motions that fabricators have been building into their dies. Thus cheaper and more simple dies can be utilized and setup time reduced.

Description — Baldwin press model C is powered through variable speed drive by 20-hp motor and is equipped with fly wheel and pneumatic clutch-brake. Cycling can be adjusted from inching through the cycle to continuous run with adjustable dwell point and dwell time. Ejection stroke and depth of fill can both be regulated from 0 to 6 inches.

Rigid tool mounting and die alignment (because of four-column construction) allows use of carbide dies or split dies. Ejection mechanism capacity is 30 tons. Die holder and core rod float independently of each other against pneumatic cushions, and positive adjustable stops control the distance of movement.

Die holder floats with maximum of 5 tons air resistance holding die in "up" position. This float capacity can be increased to up to 50 tons by addition of oil pressure system. Hydraulic head, which applies compacting pressure, can be accurately controlled to prolong tool life.

One advantage of hydraulic head is that accurate control of pressure alleviates tool breakage problem even in event of a double charge.

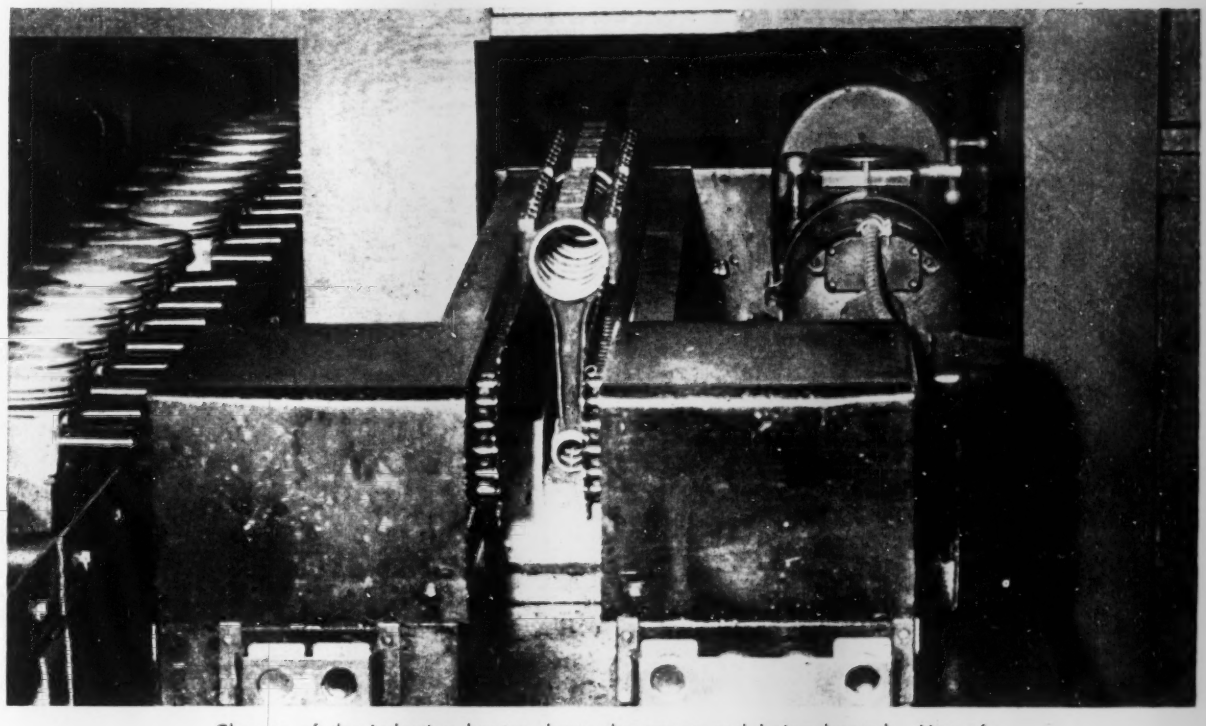
First Three—First press built will go to Precision Grinding Wheel Co., Philadelphia. It will be used to produce grinding wheels 8 inches in diameter which will be pressed to size with counterbored holes. Second and third units are scheduled for shipment to Chrysler's Amplex Division.

A 50-ton model is on the drawing board now; it is being built for Pow-Met Industries, Dayton, O. Company plans to build a complete line of compacting presses, but doubts if it will go below 50-ton size as cam-type units are efficent at lower pressures.

History—Baldwin bought out a line of presses from Defiance Machine Works, Defiance, O., in Oct., 1949. It has had a big press in mind since 1950, when it started surveying users for ideas.

Basic design and preliminary drawings for the model C were worked out by K. W. Hall, associate professor of machine design at University of Michigan. Original drawings were taken to potential customers to ascertain what additional features they wanted and design revised. Three presses were sold from these drawings, says Mr. Belden.

Decision on building a mechanical rather than hydraulic press stemmed from size limitations primarily. Hydraulic units use a much bigger pump and motor, and shock in hydraulic lines would be a problem.



Closeup of the induction heater shows the upper end being heated. Line of pistons with properly-sized wrist pins hand-inserted is shown at the left

Shrink Fit PERFECTS PISTON ASSEMBLY

Cadillac gains six advantages in use of shrink-fit technique instead of floating pin design. They expand upper end of connecting rod, let it contract on inserted wrist pin

QUIETER ENGINE operation, durability, longer piston life, economy, worry-free wrist pin performance, simplicity—these are six of the advantages Cadillac Motor Car Division has achieved with its unique method of assembling pistons and connecting rods.

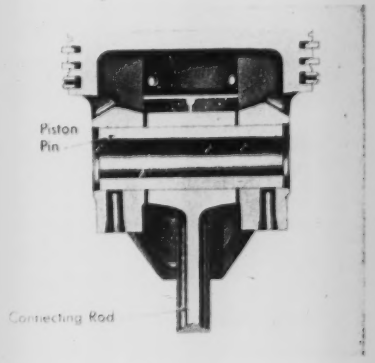
Cadillac is the only automotive manufacturer to use this so-called "shrink fit" method. The process calls for expansion of the upper end of the connecting rod by heat and its subsequent contraction around the wrist pin, after the latter has been inserted, to hold the piston and rod together.

Method has attracted considerable attention among automobile engineers. Indications now point to the possible adoption of the method by other companies.

Quick Success — Cadillac engineers began working on the technique in 1949. In 1950, after three pieces of special equipment were ready, production operations began. During 1950, only 0.0000084 per cent unsatisfactory pieces were reported in actual service performance records during the year's total production. Since that time some 2,250,000 pistons have been fitted and the need for classifying unsatisfactory wrist pins has been eliminated entirely.

Work began with the knowledge, gained from tests on the Cadillac engine, that wrist pins shrink-fitted to the connecting rods give engine performance superior to that of full floating pin design. Thus, the problem was how to assemble the pin into the rod without weakening the unit by slitting the rod or using bosses or lock screws.

Old Way—Cadillac was using a snapring on each end of the wrist pin which floated in the piston and



Typical section showing piston and rod

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Have you asked yourself

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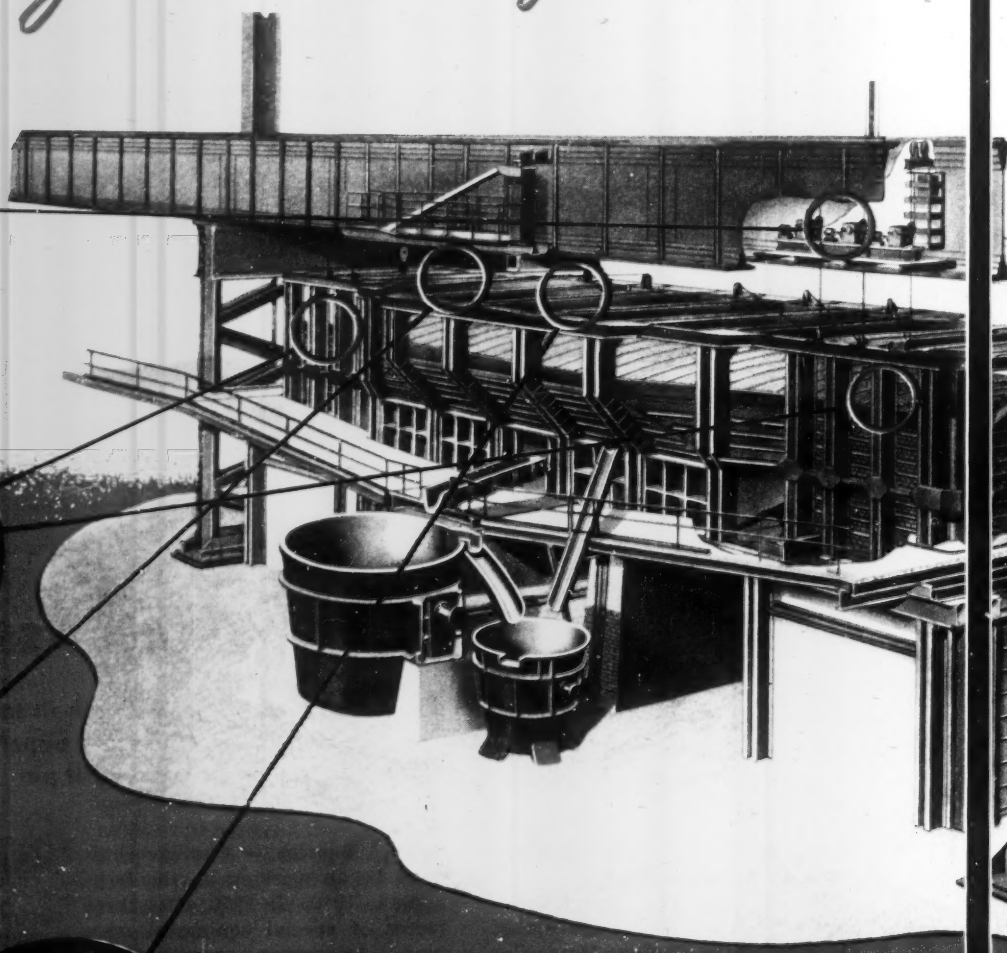
Fluid Clutches to reduce cable wear?

PORT ENDS
Suspended basic or double downtake silica?

FURNACE PRESSURE CONTROL
Hydraulic, pneumatic or electronic?

FURNACE TEMPERATURE CONTROL
Roof or backwall block?



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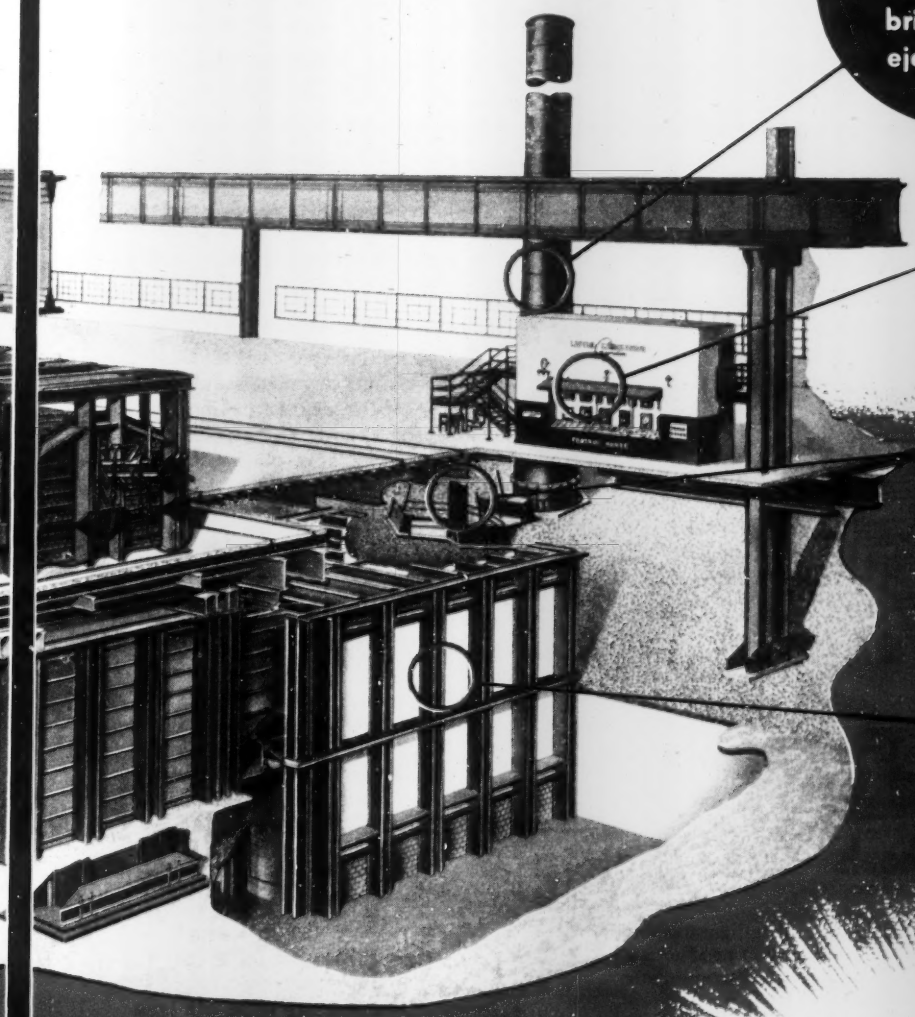
these questions?

STACK
Conventional self-supporting brick lined or ejector type?

FUEL AIR RATIO
Pneumatic or hydraulic?

REVERSING VALVE DRIVE
Drum or crank type?

REGENERATOR
Single or double pass?



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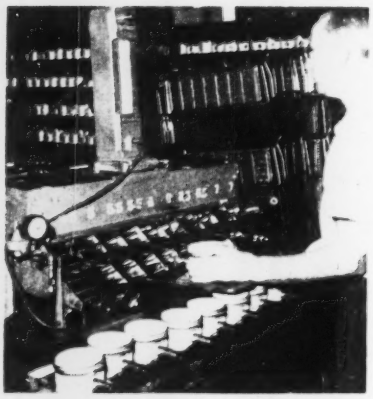

Operator uses a Precisionaire gage to select a wrist pin for the piston. Pins are in eight different sizes between limits of 0.9993 and 0.9997

rod. Other conventional methods call for the slitting of the rod and the use of lock screws to hold the pin in the rod or for the use of lock screws to hold the pin in the piston.

The problem has been met by using an induction heater to heat the upper end of the rod (SAE 1041 steel) to 300 degrees. This expands the rod enough to allow the wrist pin, already carefully hand fitted to the piston, to slip through the rod easily. The three pieces are aligned on a special fixture which quickly presses the wrist pin into the connecting rod to complete the assembly. Quickness is essential to prevent galling of the wrist pin due to contraction of the connecting rod "eye" before assembly.

Final Check—The wrist pin is pressed within an eighth of an inch of "home." After cooling sufficiently to allow the wrist pin boss in the upper end of the rod to shrink to its normal diameter, a 1,700 pound pressure load from a Denison force press is applied to press the pin "home." A check-assembly operation is thus achieved. If less than 1,700 pounds can move the pin the last eighth of an inch after the rod and pin temperatures have equalized, a bulb fails to light and the assembly is rejected.

Tests and actual performance records confirm that this pressure is a safe amount to insure that the pin will never come out.

FEDDERS ROOM AIR-CONDITIONERS

GET LASTING ENAMEL ADHERENCE

. . . and adherence of baked synthetic enamel finishes is extremely important to Fedders-Quigan Corporation, Buffalo, New York, manufacturers of Room Air Conditioners.

Parts of these units are often subjected to a constant flow of moist and humid air. Approximately 50 percent of the shell is exposed to the atmosphere. Because of high vulnerability to rust and corrosion, it is essential that the exposed surfaces not only "take" but also tenaciously *hold* the attractive finishes that are applied.

For these reasons, Republic Electro Paintlok is used for the shell, mounting brackets, fan shrouds, bulkheads and covers of the Fedders Room Air Conditioners.

Republic Electro Paintlok facilitates manufacturing operations, too. The tight zinc coating will not crack, peel or flake during normal fabrication. Special chemical treatment gives the zinc coating an inert, non-metallic surface which is absorbent in character; a prime condition for painting.

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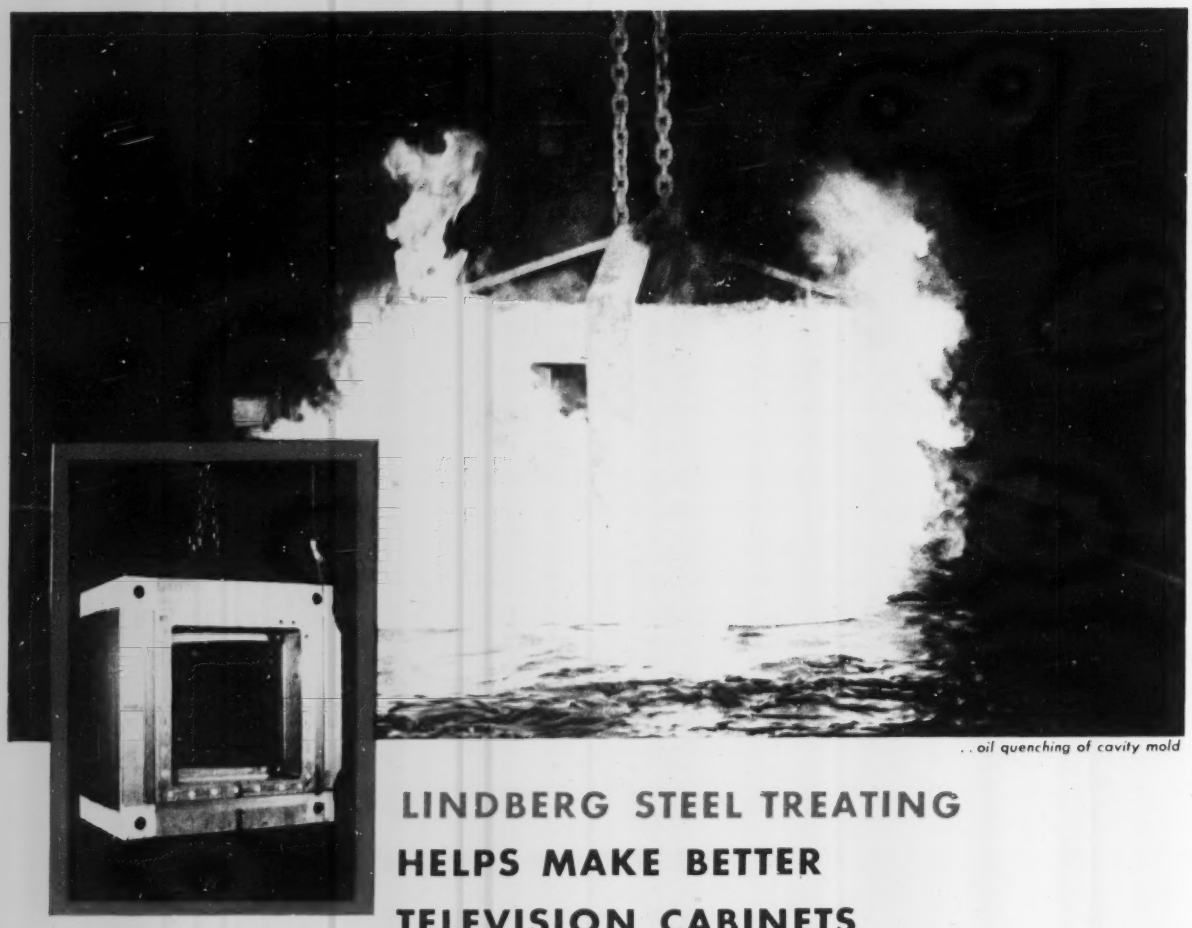


. . oil quenching of cavity mold

LINDBERG STEEL TREATING HELPS MAKE BETTER TELEVISION CABINETS

On Chicago's west side, one of the largest sets of plastic molds in the world is producing 21" Motorola television cabinets at a rate of more than one every five minutes.

These molds, designed by Chicago Molded Products Company in cooperation with Motorola, and heat treated by Lindberg Steel Treating Company, weigh more than five tons . . outside dimensions are 40" x 43" x 36" . . and they're worth $75,000 a pair!

The production of such a set of molds is a perfect example of team-work by American industry. Crucible Steel Company poured the ingots, and pressed them into huge blocks each weighing 13,900 pounds. The R. O. Schulz plant in Elmwood Park, Illinois, did the machining and polishing.

Next, came the heat treating . . the finished molds had to be treated to precisely the right hardness . . for they had to withstand the washing of plastic materials . . and they had to be tough enough to stand up under the terrific pressure of the 1500 ton compression molding press.

At this point Lindberg metallurgists and heat treaters went into action. There could be no trial runs . . no mistakes, or $75,000 worth of molds quickly could become $600 worth of scrap metal.

Heat treating specialists selected the proper furnace, specified the correct heating temperature, the necessary time at heat, the right procedure for quenching. "Operation Motorola" went off without the slightest hitch. Within hours after tempering, the molds received final surface polishing . . in a matter of days they were forming cabinets for Motorola TV sets.

Lindberg Steel Treating Co., and its large staff of metallurgists and heat treaters are available to consult on *your* heat treating requirements . . whether your problem is simple or "almost impossible."

A case history of Lindberg Steel Treating Co. service to American industry

LINDBERG STEEL TREATING CO.

1973 North Ruby Street, Melrose Park (Chicago), Illinois Phone: Fillmore 4-4030

Plants in

MELROSE PARK, ILL. (Chicago)
1975 North Ruby
Fillmore 4-4080

ROCHESTER
620 Buffalo Rd.
GEnessee 5212

ST. LOUIS
650 E. Taylor
Fireside 6200

LOS ANGELES
2910 So. Sunol Drive
ANgelus 9-7311

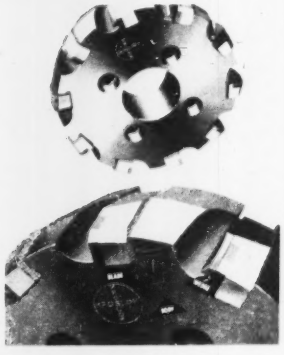
NEW PRODUCTS and equipment

Reply card on page 113 will bring you more information on any new products and equipment in this issue

Milling Cutter Line

. . . for faces and shell ends

Three basic members make up this cutter line: Body, blade and wedge. Cross serrations on one side of body channel mate with similar cross serrations on blade,



assuring rigid holding of blade in body.

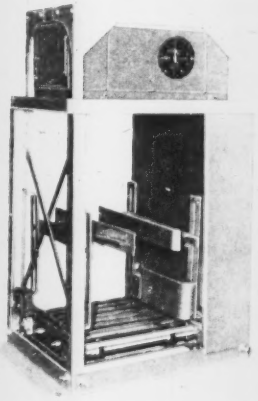
Two basic body types are offered: General purpose and heavy duty, both for nonferrous and ferrous applications. Right and left-hand bodies and blades are offered. Blade diameters from 3 through 24 inches and other special sizes are available. Motch & Merryweather Machinery Co., Dept. ST, Penton Bldg., Cleveland 13, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Automatic Checkweigh Scale

. . . spots errors automatically

Designed for checkweighing filled bags between bag-filling scale and bag sewing machine, or for checkweighing cartons between filling and sealing machines, this model indicates exact amount over or under prescribed package weight. Unit includes totally-enclosed electro-mechanical weighing mechanism, two weight-indicating dials, motor driven conveyor belt, conveyor, automatic horn and controls. Floor space required is only



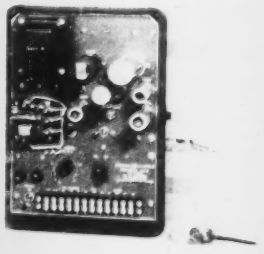
28 x 36 inches and construction permits mounting as close as 8 inches to the floor. Thayer Scale & Engineering Corp., Dept. ST, E. Water St., Rockland, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Vibration Relay

. . . protects rotating equipment

A protective device that initiates a signal when excessive vibration due to unbalance occurs in large rotating equipment is engineered



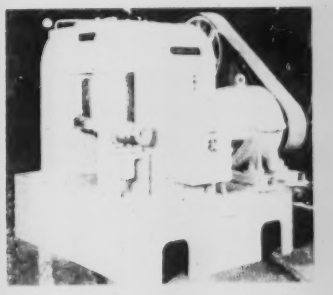
specifically for apparatus left unattended for long periods. Relay has an operating range that allows its use at speeds from 300 to 18,000 rpm to energize warning-alarm, corrective or shutdown devices at preset vibration acceleration values up to 20g. General Electric Co., Dept. ST, Schenectady 5, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Improved Bull Blocks

. . . self-contained worm drive

This model differs from the manufacturer's previous bull blocks in that the overhung coil drum is ar-



ranged so coil drops to the unloading platform the instant last piece of material leaves the die. From there it is easily removed by operator without use of overhead cranes.

Block features a self-contained worm drive and is capable of drawing at speeds up to 440 fpm. Medart Co., Dept. ST, 3535 DeKalb St., St. Louis 18, Mo.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

Low-Cost Baking Oven

. . . a 50-per cent timesaver

Adjustable temperature controls and forced air circulation throughout baking chamber provide constant temperature for processing many special types of paints and finishes. Fan draws fresh air into heating unit through a controlled air intake. Air is then heated to

indicated temperature before being forced into baking chamber where it is circulated in a definite air-flow pattern.

Volatiles, moistures and impurities are carried out of the chamber

through positive exhaust control. Inside working area dimensions are 42 inches wide x 36 inches deep x 52 inches high. Baron Industries, Dept. ST, 241 West Ave. 26, Los Angeles 31, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Fire-Resistant Panels

. . . protection, color stability

Self-extinguishing, fire-resistant translucent Fiberglass panels are designed for special installations in critical fire areas. The panel

achieves its high fire-resistant quality while maintaining adequate color stability.

It is available in standard corrugations and flat sheets, and in three colors. Alsynite Co. of America, Dept. ST, 4654 DeSoto St., San Diego, Calif.

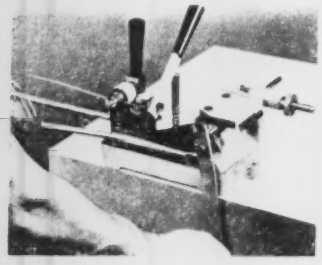
FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Spring Winding Machine

. . . operator needs no experience

No special skill or experience is needed for operation of this spring winding machine, a self-contained unit with special cut-off lever incorporated. Winder is ready for operation as soon as it is mounted on bench or vise.

Any gage wire, to ¼-inch diameter, can be wound into extension, compression, torsion and flat springs. Unique tension clamp



mechanism permits duplicate springs to be wound so they test with same load capacity. O'Neil-Irwin Mfg. Co., Dept. ST, 619 Eighth Ave., Lake City, Minn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Torsion Spring Tester

. . . 5 to 100 inch pounds

Designed to test right and left-hand torsion springs, this machine is available in capacities from 5 up to 100 inch pounds, or the equivalent in the metric system. Deflection dial is graduated to 360 degrees in increments of 1 degree, figured every 10 degrees.

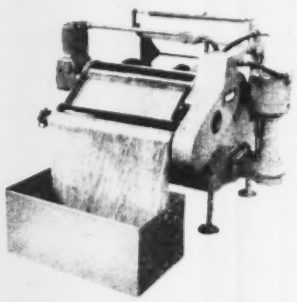
Accuracy is reported to within 1 per cent. Tester is mounted on a silver hammertone, solid channel, iron base, and operating shaft is seated in double shielded ball bearings. John Chatillon & Sons, Dept. ST, 85-93 Cliff St., New York 38, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Large-Capacity Filters

. . . fabric and magnetic units

These nonmagnetic and magnetic filters have flow capacity four times greater than units previously marketed by this company. After exposure to magnetic field from permanent magnets in the rotating drum, contaminated coolant flows to filtering area where



it passes through filtering fabric of predetermined porosity before returning to storage reservoir for re-use.

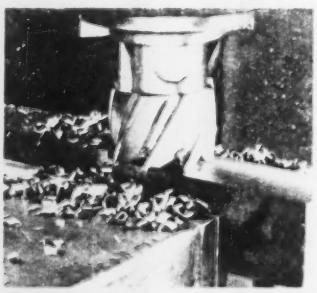
Since magnetic field removes major part of the contaminant, consumption of fabric is minimized. New fabric is automatically fed into filtering pool intermittently as required. Barnes Drill Co., Dept. ST, Rockford, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Wide Capacity Chuck

. . . cutters: 2-6 inch diameter

Wide capacity of this Dedlock chuck, which holds cutters from



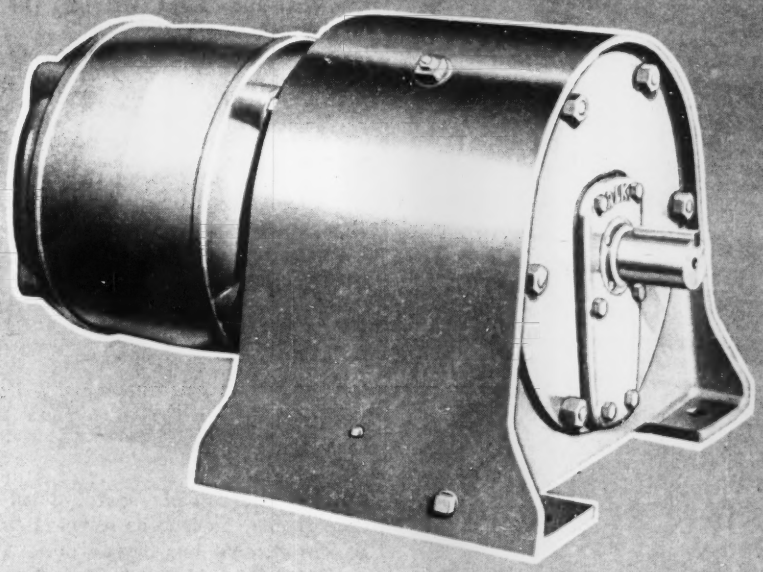
2 to 6 inches in diameter, eliminates conventional use of four dif-

Announcing the *–Newly Designed–* Integral

ALL-STEEL FALK Motoreducer

(Gearmotor Type–Supplementing Falk All-Motor Line)

. . . with completely standard round-frame, D-flange motor



Check and Compare these features...

Meet a faithful old friend in a new, modern dress! The famous, time-proved Integral Type *all-steel* Falk Motoreducer (Supplementing Falk All-Motor Line) has been redesigned into a compact, streamlined unit providing the utmost in space economy—but retaining all the application versatility, long-life performance, easy-maintenance features and superior structural qualities that have made Falk Motoreducers the recognized standard throughout industry.

In this new Integral unit—rated in accordance with AGMA standards—a *completely standard* round-frame, D flange NEMA motor is mounted directly on the all-steel Motoreducer housing. The motor remains a separate piece of equipment, readily replaceable with any other type or make. Output speed (ratio) can be changed within unit's torque capacity without modifying motor. Size and arrangement of the standard housing permit wide ratio range—from 3.36:1 to 542:1.

In order to meet the greatest number of industrial application needs, the newly designed Integral Motoreducers are available in horizontal and vertical models, both in concentric and right-angle types; double, triple and quadruple reduction; horsepower range, 1 to 40 HP. Prompt stock shipment in standard ratios is offered.

Whatever your reduction requirements, you get greatest dollar-for-dollar value in the long run by standardizing on Falk products. Write for Bulletin 3104.

Every FALK Motoreducer has these "In-built" Factors—

Precision Gearing. Heat treated alloy steel, precision cut and shaved helical gearing throughout . . . quiet-operating crown shaved pinions . . . taper bored gears for easy ratio changes.

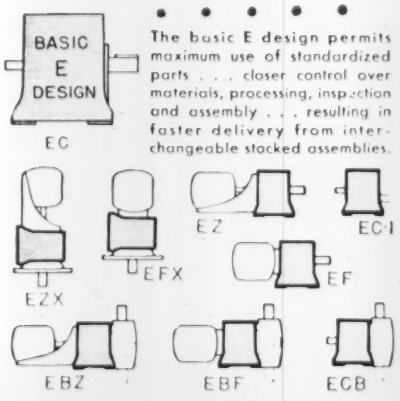
All-steel Housings. Unbreakable, strong, rigid. Generous overhung load capacities provided by wide bearing spans, large shafts and bearings.

Streamlined inside and outside. Smooth, clean surfaces, machine welded construction conforms to NEMA motor frames.

Positive Lubrication. Large sump capacity . . . oil-tight construction assures clean lubricant . . . direct dip of revolving elements provides positive lubrication at all speeds.

Wide Speed Range. Selective ratio combinations provide output speeds from 1.5 rpm to 1430 rpm with stock gears.

Sealed Housings. Dual closures and one-way vents keep oil *in*, dust and moisture *out*. Units are splash-proof, leakproof, dustproof.



The basic E design permits maximum use of standardized parts . . . closer control over materials, processing, inspection and assembly . . . resulting in faster delivery from interchangeable stocked assemblies.

FALK ...a good name in industry

THE FALK CORPORATION · 3001 W. Canal St. · Milwaukee 8, Wis.

WRITE FOR BULLETIN 3104

newest aid

to users of fasteners

Everyone who designs, specifies or purchases needs this useful

RIVET SELECTOR!

Handiest selector you ever saw!

Simplifies your job; saves time, speeds choice of right fastener. Easy to read, easy to use, handsomely lithographed in red, white and blue. Shows various tubular and split rivets, part catalog number, normal clinch allowance, size of clearance hole in work and other details to aid your product manufacturing. Sturdily riveted together for lasting use. Write for yours today!

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MILFORD

The name to *RIVET* in your memory for fasteners.

THE MILFORD RIVET & MACHINE COMPANY

931 BRIDGEPORT AVENUE, MILFORD, CONNECTICUT
880 ILLINOIS AVENUE, AURORA, ILLINOIS
1160 WEST RIVER STREET, ELYRIA, OHIO
80 PLATT STREET, HATBORO, PENNSYLVANIA
757 SO. PALM AVENUE, ALHAMBRA, CALIFORNIA

ferent adaptors and avoids also the time-consuming operation of repeated adaptor changing. The device holds the cutter rigid and assures true running with evenly-distributed tooth load.

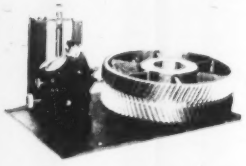
For machines having a taper smaller than No. 4 Morse, a damping device is fitted to eliminate vibration and add rigidity. The device screws from the body of the chuck against the spindle nose. Clarkson Inc., Dept. ST, 320 Ontario St., Toledo, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Clampless Hardness Tester

. . . checks inaccessible parts

Developed for testing the many parts and places inaccessible when clamps are employed, this multiple



angle semi-portable metal hardness tester can also be adapted as a conventional bench-type unit.

With adjustable loads from 1 to 30 kilograms, and with no restricting clamps in front, a tester can easily handle the smallest and thinnest pieces as well as large and odd-shaped items. C. Tennant Sons & Co., Dept. ST, 100 Park Ave., New York 17, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Rotating Filter Screens

. . . keeps filtering area fresh

This new filter automatically rotates fresh filtering area into position while simultaneously ejecting contaminant cake. Screen material and size of screen open-

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Just circle the corresponding number of any item in this section for more information.

Yours FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY!

70. Rolling Doors

Kinnear Mfg. Co.—32-page illustrated bulletin 75 is descriptive of steel rolling service doors. Several pages are devoted to electric operation, features, door types with sizes and clearances, rolling fire doors, overhead Rol-Top doors, steel rolling grilles and bifold doors. Company's registered service offered consists of keeping complete details and drawings on every installation in fireproof vaults.

71. Selective Carburizing

Walmil Co.—A simple product for selective carburizing, De-Ox-Tix can be applied to parts requiring selective hardening of either inside or outside diameter. It is custom made, with potency tailored to each job. Survey sheet forms are now available so that those interested can get an indication of process possibilities.

72. Industrial Pulverizing

Majac Engineering Co.—Pulverization of such materials as limestone, coke, mica, perlite, feldspar and graphite is covered in illustrated bulletin, which also shows construction and operating features of a Jet Pulverizer. This unit operates without foundation, actuated by steam, gas or compressed air.

73. Radial Drills

Morris Machine Tool Co.—In 16 well-illustrated pages, bulletin 591H shows a complete line of production radial drill presses in both light and heavy duty types. Individual features and construction are shown in detail, as are accessories. All have 6in. columns. The light duty models have nine spindle speeds, the heavy duty, 12.

74. Metal Cleaning

Oakite Products, Inc.—"Some Good Things to Know About Metal Cleaning" is pocket-size 44-page booklet which covers tank and machine cleaning methods, electrocleaning of steel and nonferrous metals, pickling, prepaint treatment, paint stripping, steam-detergent cleaning, barrel finishing, burnishing and rust prevention, among others. Applicable materials are related.

75. Carbide Tools

Nelco Tool Co.—Nearly 800 Nelco carbide tools, including milling cutters, drills, arbors, grinder-lathe centers and tools, are described and illustrated in this 48-page catalog. Specification drawings are in it, too.

76. Cranes & Mills

Morgan Engineering Co.—"For the Big, Tough Jobs" is title of 8-page brochure which serves to introduce the reader to this manufacturer of cranes, mills, chargers, shears and presses. Photos picture some major installations and show company's own facilities as well.

77. Tooling Plastic

Ren-ite Plastics, Inc.—Ren-ite thermosetting resin for use as a laminated plastic without application of heat or pressure for general tooling applications is introduced in 12-page brochure. Uses of product in making duplications, spotting racks, checking and welding fixtures, prototypes, stretch press and forming dies, core boxes, tubing and fittings are pictured.

78. Refractory Brick

Corhart Refractories Co.—Describing grade 104 electrically melted and cast brick refractory for open hearth liners, 12-page illustrated bulletin shows comparative standard test results such as slag erosion and spalling. Product has been found in good operating condition after 192 heats.

10-19-53

STEEL
Penton Building, Cleveland 13, Ohio

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COMPANY _____

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3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
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4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
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STEEL

Penton Building, Cleveland 13, Ohio

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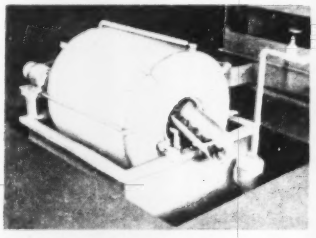
Reader Service Dept.

ing can be supplied in monel, stainless steel, brass or bronze to fit all requirements.

The compact unit conserves floor space and eliminates costly consumption of throw-away filtering



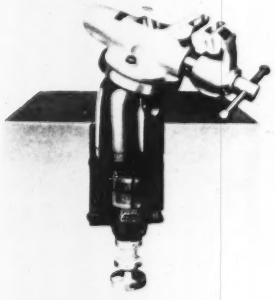
media since the wire screen has many times the life of finest cloth filtering webs. Gallon capacity of filtration can be increased by adding filter drums in tandem either separately or in the same tank. Murray-Way Corp., Dept. ST, Birmingham, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Heavy-Duty Hydraulic Fixture

. . . carries 1000 pounds

A heavy-duty fixture, capable of carrying 1000 pounds, is added to this company's line of positioners.

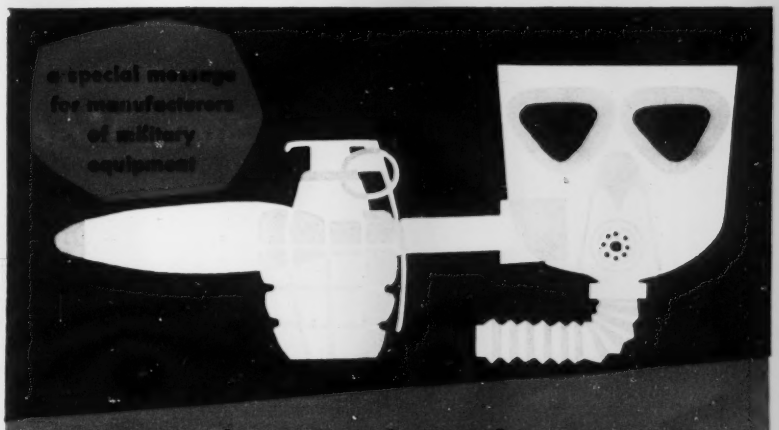


New unit will have excellent use in foundries to position large castings for filing and chipping. It may be used vertically mounted to the side of a workbench or horizontally.

Slotted base permits use with

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.



need a finish to beat these specs?

specify IRIDITE®

AN-C-170 MIL-S5002 MIL-C-5541 AN-P32
AMS-2402A USA-50-80-11A J.Q.D. No. 144B
USA 57-93-2A O.S. No. 1374 USA 57-0-2C AN-P61
A-XS-1607 QQ-P-416 QQ-Z-325 MIL-3151

if you're finishing under these or similar specifications, here's how you can use Iridite:

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD

Yes Sir...
this WIRETEX Steam Hose will meet your specifications

Where you must have the Safety of a Burst-Proof Hose and the extreme flexibility that only Republic WIRETEX can give . . . a hose that will **safely** carry super heated steam up to 388° F. . . . then WIRETEX Steam Hose will meet your specifications

and with more to spare

Republic WIRETEX is built in 50-foot **Economy Lengths.** With WIRETEX, you save money when you buy; time and money when you use it! Get the facts today! Other Republic WIRETEX Hoses are available in all standard (⅜" to 2") sizes for handling Air, Steam, Hydraulic Fluids, Greases and other Petroleum Products.

Your local Republic Distributor can help you plan, select, apply and maintain any Product of Industrial Rubber. If he is not listed in the yellow section of your telephone directory, write us for his name and address.

REPUBLIC RUBBER DIVISION
LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO
INDUSTRIAL RUBBER PRODUCTS

NEW PRODUCTS and equipment

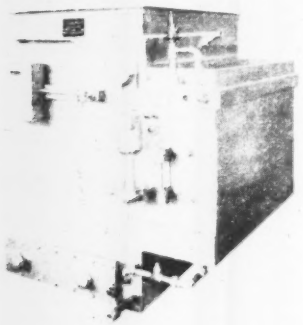
drill presses, shapers and milling machines for machining operations at compound angles. Hydraulic action permits operator to make a change of position under partial tension, thus preventing work from accidentally falling. Wilton Tool Mfg. Co., Dept. ST, 925-941 Wrightwood Ave., Chicago 14, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Improved Vapor Degreaser

. . . easily installed, maintained

Principal features of this degreaser design include: Obstruction-free tank walls, recessed condensing coils, removable pump



chamber and water separator of solid stainless steel, one-end maintenance and demand-type control of water into the water condensing system.

All service connections and clean-out openings are located at one end of the tank, making for easier installation and maintenance. Metalwash Machinery Corp., Dept. ST, 901 North Ave., Elizabeth 4, N. J.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Snow and Ice Remover

. . . 97 per cent active

Made in dry pellet form, this anhydrous substance is said to be 97 per cent active for snow and ice removal. It is estimated to have 10 times the thawing power of flake calcium chloride at 10° F. Internal generation of heat provides the fast melting action.

Substance can be applied at beginning of snow fall or freeze and will keep surfaces clean and ice-free for hours. It is free of insoluble residues and is harmless

Entrance

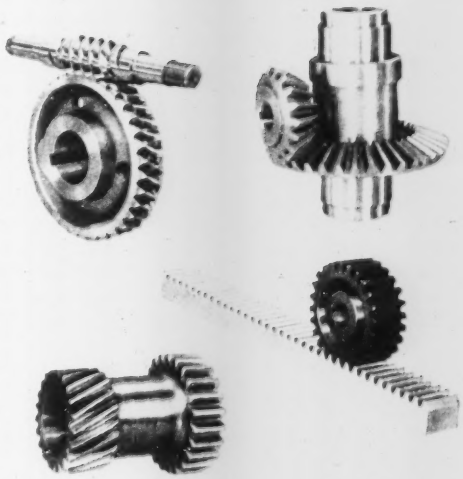
to The World's Most Modern Gear Manufacturing Plants

...the doorway to better gears!

When your gear orders pass through this doorway, you can leave your gear worries on the doorstep.

Skilled Illinois Gear men take over immediately with the newest and finest precision gear making equipment available *anywhere*.

Your order will be filled *on time* with gears that measure up to your most demanding specifications for accuracy, finish and high quality.



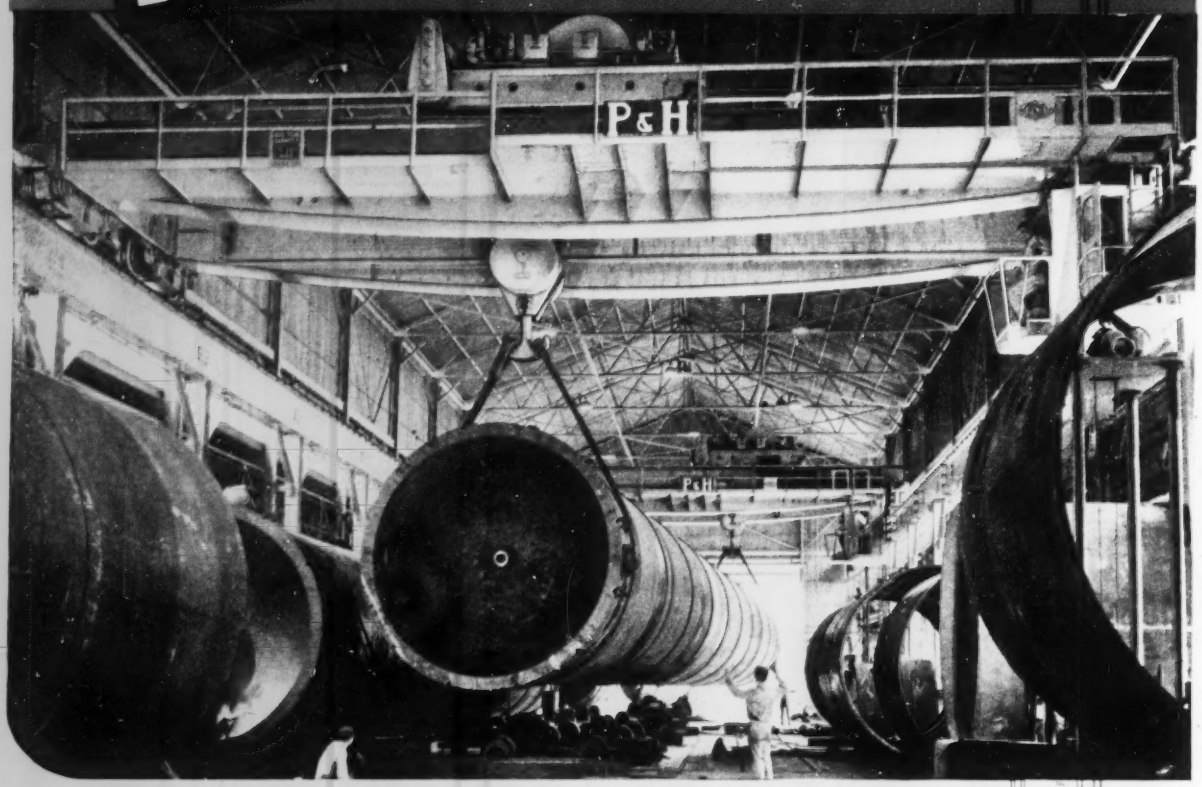
ILLINOIS GEARS Reg. U.S. Pat. Off.

Gears for Every Purpose ... **one gear or 10,000 or more**

ILLINOIS GEAR & MACHINE COMPANY

2108 N. Natchez Avenue Chicago 35, Illinois

P&H OVERHEAD CRANES



Why P&H builds the entire Crane

. . . including electrical equipment!

If you want the utmost in service from your cranes, insist that they be job *engineered* by P&H — not an assembly of components from various sources. For example, general purpose electric motors don't stand the gaff of crane service like those *designed* for the job. That's why P&H builds its own motors, brakes and controls — with all characteristics *properly suited* to crane operation: P&H electrical equipment throughout is your assurance that all functions are perfectly coordinated. It means better service, less maintenance.

This policy of complete quality control — of single manufacturing responsibility — better service — made P&H the leading builder of overhead traveling cranes. Continuous improvement, far ahead of the field, has extended this leadership. Benefit by it when you buy your next cranes.

*T.M. of Harnischfeger Corporation for electromagnetic type brake.

P&H

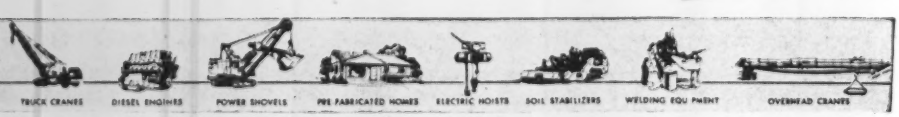
P&H OVERHEAD CRANE DIVISION

HARNISCHFEGER CORPORATION

Milwaukee 46, Wisconsin

P&H MAGNETORQUE* AC Crane Control is the most important development in crane service in 25 years.

the P&H Line



to vegetation, rubber, concrete and clothing. Surface Protection Co. Inc., Dept. ST, 16799 Euclid Ave., Cleveland 12, O.

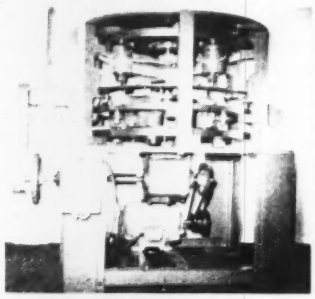
FOR MORE DATA—CIRCLE REPLY CARD NO. 15

High Speed Beading Machine

. . . for thread, contour work

Suitable for thread-rolling or contour forming on shallow containers or bands, this multispindle machine has high speed, and up to 5-inch diameter work capacity.

It features spring loaded pressure control resulting in long tool life, all-rotary motion and is ball bearing equipped. Steiner Machine Co., Dept. ST, 1014 Washington St., Hoboken, N. J.



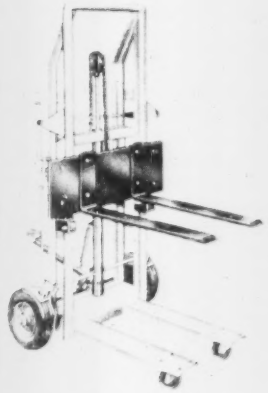
FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Hand Model Lift Truck

. . . lifts 1000 pounds 53 inches

This one-man hydraulic lift truck can lift loads of 1000 pounds to a height of 53 inches and will operate in narrow aisles and close quarters. Combination snap-on plate permits use as platform truck when forks are not required.

Foot lever operation, safety release pedal and wheel lock, permit one-man operation with maximum safety. Safeway Industrial Equipment Corp., Dept. ST, 181 N. Franklin St., Chicago 6, Ill.



FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Magnetic Chip Retriever

. . . gains hard-to-reach places

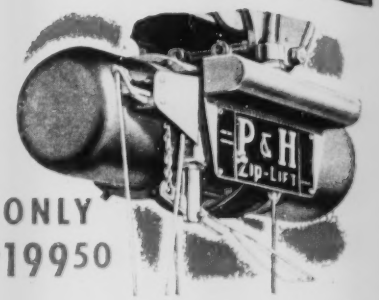
Made of super magnetic alloy, this tool removes chips from blind drill and top holes on production lines and in assembly work, both electrical and mechanical. Unit is useful for assemblers and inspectors to test coats of surfaces for magnetic properties of the under material.

No larger than a fountain pen, the retriever is mounted in a fiber nonconductive case with a pocket clip. Available in $\frac{1}{4}$ and $\frac{3}{8}$-inch diameter sizes, length over-all is $6\frac{1}{4}$ inches. General Scientific Equipment Co., Dept. ST, 2700 W. Huntingdon St., Philadelphia 32, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

P&H ELECTRIC HOISTS

Imagine!
A P&H
ZIP-LIFT
AT THIS
NEW
LOW PRICE



ONLY
$1995.50

A real wire rope hoist!

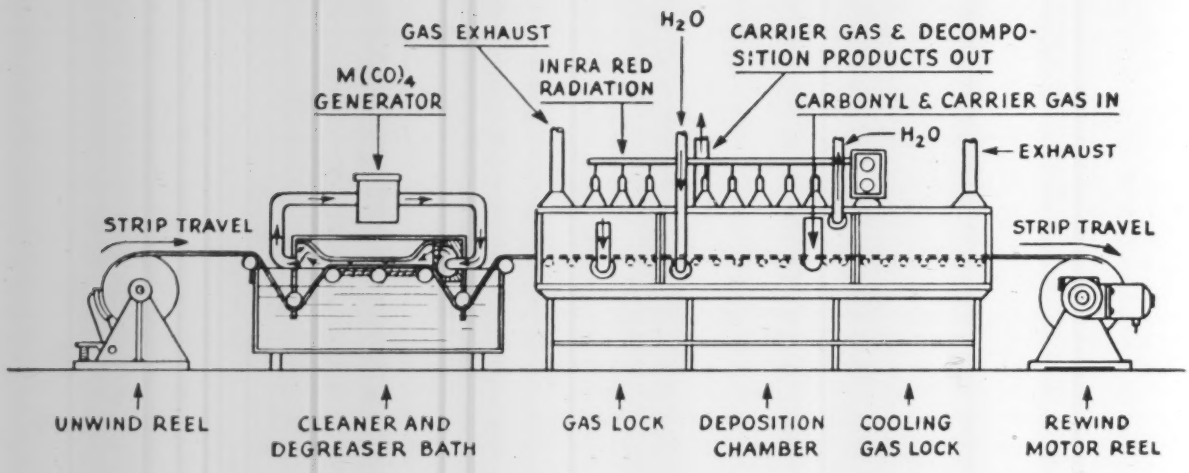
Of course you prefer the Zip-Lift! With all its quality features, who wouldn't! But if higher cost has stopped you, here's good news. It is now available with improved rope control (one pendant, *not two*), for simple, easy, trouble-free operation — for only $199.50. It is the same Zip Lift in other respects — same quality — new type control. *What a buy!*

Call your Zip-Lift Dealer
Or write us for Bulletin H-29

Available also with full electric push-button control.

Other models up to 15-tons capacity

P&H ELECTRIC HOIST DIVISION
HARNISCHFEGER
CORPORATION
Milwaukee 46, Wis.



Commonwealth method for continuous plating of strip. Screen or paper may be handled similarly. Different apparatus puts gas plate on wire

Gas Plating Offers Versatility

Dry plating process will work with any metallic compound that is capable of being vaporized and has a decomposition temperature. Metal carbonyls are particularly adaptable

GAS PLATING had its origin when Ludwig Mond, an Englishman, found that volatile nickel carbonyl will decompose and deposit nickel on a heated surface.

That was in 1890. Today, Commonwealth Engineering Co., Dayton, O., after taking up practically where Mond left off, has developed the process to where it promises to shape up as a major plating process.

Its potentialities stir the imagination. In continuous casting of steel, for example, a metal plate can be automatically deposited as the ingot takes shape. After a rolling operation, the end product is clad sheet. Laminates of plated metals can be made by halting the first plate and depositing a second film of the same or another metal over the first.

Principle — Process is simple: Metal carbonyl gas (also nitrosyls, hydrides, salts and metal organics) is circulated about the object to be plated. Workpiece is heated and the metal plates out as the gas contacts the hot surface. Process is not to be confused with vacuum deposition.

Decomposition is controllable and can be made to produce metallic films such as those obtained by electroplating and other means. Obvious difference is that balance of complex solutions and intricate electrode arrangements aren't involved. Size or complexity of object is of no consequence, and inner or outer surfaces may be plated as desired.

Three primary determinants control final metal deposit: 1. Concentration of metal compound in carrier gas. 2. Rate of flow of plating atmosphere and 3. Temperature of objects to be plated. (Each control permits regulation of operation as to density, speed, ductility and thickness of plate.)

Operation—Typical example of process involves nickel plating of gasoline fuel delivery nozzles—other plating metals include copper, chromium, iron, tungsten, molybdenum and silver, for example. If article permits, clean metal surfaces may be obtained in reducing atmosphere furnace.

Nozzles are conveyorized before entering operation preparatory to plating. Conveyor rack passes through a gas lock zone and enters plating zone. Use of dielectric, induction or radiation heating in gas lock zone or first stages of plating chamber bring pieces to plating temperature.

To obtain desired metal thickness, nozzles pass through plating

chamber at a predetermined rate, then into exit gas lock, where they may be cooled to facilitate manual handling. As plated nozzles come off line, operator removes them and feeds unplated pieces.

Plating conditions in chamber are usually adjusted to give residence time of 30 seconds or less, depending, of course, upon character and thickness of plate. With gas plating it's possible to deposit 0.001-inch films of metal in from 3 to 5 seconds.

Wire—Wire, strip, screen or paper may be plated continuously. In case of wire, temperatures are obtained in plating chamber with electrical circuits and are controlled by resistance of wire being plated.

Speed and control of process are regulated from gearing of the take-up drum. Wire is drawn through the first zone, where metal is cleaned by heating it electrically in an atmosphere of hydrogen. It passes through an air lock, then into the plating chamber, where it is again heated electrically in a circulating atmosphere of nickel carbonyl and carrier gas. Wire is then drawn through another air lock into an annealing chamber and, finally, through another lock to the take-up drum.

Scope—Basically, any metallic compound capable of being vaporized, having a decomposition temperature, may be used in the gas plating process.

Metal carbonyls are excellent starting materials because they may be handled with ease and lend themselves to the process. Nickel carbonyl, for example, is readily vaporized in carrier gases, such as carbon dioxide, nitrogen and hydrogen.

Freezing point of nickel carbonyl is −30° F; its boiling point is

COMPARISON OF PLATING PROCESSES

Gas Plating	Wet Plating
1. Does not weaken base metal	1. Causes hydrogen embrittlement
2. No limit as to size or location of workpiece	2. Limited as to size and location of workpiece
3. No special tanks	3. Requires special tanks
4. More base metals	4. Fewer base metals
5. More plating metals	5. Fewer plating metals
6. Requires only seconds	6. Requires minutes to hours
7. No electrolytes—no electrodes	7. Electrolytes—electrodes
8. Gas easy to handle—little waste	8. Liquids difficult—much waste
9. Applicable to small size bore articles	9. Limited as to size
10. Can plate different alloys simultaneously	10. Very difficult and not practical to plate different alloys simultaneously
11. Improved quality of plate	

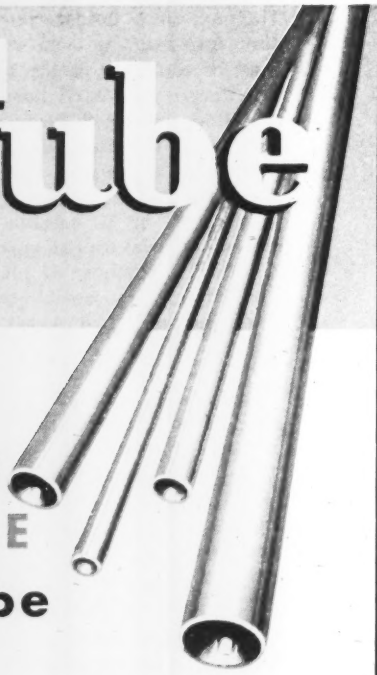
PHYSICAL PROPERTIES OF VARIOUS CARBONYLS

	Molecular Weight	Decomposition Temp. °C.	Specific Gravity	Boiling Point °C.	Melting Point °C.	Physical Form
Nickel Carbonyl $Ni(CO)_4$	170.73	190-205°	1.318	− 43°	25°	Colorless liquid or gas. Soluble in alcohol, ether, benzene
Iron Pentacarbonyl $Fe(CO)_5$	195.89	150°	1.466	102.5°	21°	Yellow viscous liquid Soluble in benzol, ether, alcohol. Other Iron carbonyls are $Fe_2(CO)_9$, $Fe(CO)_4$
Chromium Carbonyl $Cr(CO)_6$	220.01	150°		Decomposes with vaporization at 150°		Colorless orthorhombic crystals
Molybdenum Carbonyl $Mo(CO)_6$	264.01	150°	1.96	Decomposes at 150° C		Colorless orthorhombic diamagnetic crystals
Tungsten Carbonyl $W(CO)_6$	351.92	150°		Vapor pressure 20° C 0.01mmHg 102 C 15.5mmHg		White orthorhombic crystals
Cobalt Carbonyl $[Co(CO)_4]_4$	(571.88)			Decomposes		Jet black solid
$[Co(CO)_4]_2$	(341.96)	52°	1.73	52°	51°	Orange solid
Ruthenium Carbonyl $Ru(CO)_5$		200° in absence of air				White crystalline solid
$Ru_2(CO)_{12}$	269.70				22°	

Note: The carbonyls of the following metals have also been prepared: Iridium, Osmium, Rhodium, Rhenium. The vapors of all carbonyls are toxic and should be handled with reasonable precaution.

with pardonable pride we consider ourselves

Tube



Come to Wolverine for ALUMINUM TUBE as well as Copper Tube

When you buy Wolverine aluminum tube you will do so with the same confidence that you have in buying Wolverine copper tube. That's because our aluminum tube is produced under the same top quality control that has brought distinction to our copper tube through our 36 years of tube manufacturing.

This tube lends itself most admirably for use in making television antennas and many types of indoor and outdoor furniture. It is also applicable in the refrigeration industry for suction lines.

This tube is made from 2S and 3S aluminum in standard sizes from ¼" thru 2" O.D., in wall thickness ranging from .020 thru .180. We are well equipped to meet your particular specifications.

In addition to plain aluminum tube, Wolverine also manufactures aluminum finned tube either in all-aluminum or in bi-metal. It is known as Wolverine Trufin* and is especially suited for effective heat transfer. In bi-metal—Trufin combines the advantages of all-aluminum integrally finned tube with a liner of copper or a copper base alloy on the inside. (Of course, Trufin is also available in all-copper, copper base alloy, 1010 welded steel, and type 304 stainless steel.)

Trufin is available in 5 fins, 7 fins, 9 fins, 11 fins, 16 fins, and 19 fins per inch, with outside fin diameters ranging from ½" to 2".

Call your nearest Wolverine Sales Representative now to help you select the proper aluminum tube to meet your needs.

*REG. U. S. PAT. OFF.

Wolverine Trufin and the Wolverine Spun End Process available in Canada through the Unifin Tube Co., London, Ontario.

Specialists

and now a most recent addition

Wolverine ELECTRIC-WELDED STEEL TUBE

Backed by an experience gained by over 36 years of tube making — every minute devoted to the production of only top quality nonferrous tubing — we can logically say without fear of contradiction that we are "Tube Specialists."

And so when we offer our new product—Electric-Welded Steel Tube —we ask you to accept it with the same degree of confidence that prevails in the case of our well known nonferrous products which have been making steadfast friends throughout the years.

The same standards of production that we maintain in the making of nonferrous tube are held in the production of our electric-welded steel tube. Most rigid controls prevail.

Specify Wolverine Electric-Welded Steel Tube (mechanical and pressure) whenever steel tube is considered.

Sizes range from ¼" through 3" O.D. in the following analyses: SAE 1010, SAE 1015, SAE 1020, SAE 1025, SAE 1030.

Your inquiries will receive our prompt attention.

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SCOPE OF GAS PLATING PROCESS

Commonwealth Engineering has had numerous contracts with governmental and commercial institutions. Following is a partial list of applications.

Nickel fire molds	heavy coating of nickel plating on lead molds.
Nickel coated steel tubes	thin coating of nickel on steel tubes for corrosion protection.
Nickel coated steel pipe, I. D.	1-2 mil coating of nickel on steel pipe for corrosion protection.
Nickel coated wire	thin coating on fine wire.
Nickel coated aluminum discs	flash coating for electrical purposes.
Copper on ceramic discs	flash coating of copper on ceramic discs for electrical purposes.
Nickel on cadmium	silver alloy 5 mil coating of nickel on small panels.
Copper on zirconium	thin coating on zirconium.
Nickel on magnesium	5 mil coating for corrosion protection.
Nickel on strip steel	5 mil steel strip coated with varied thickness of nickel.
Chromium on steel	coatings on tubes and bars.
Nickel on sintered brass	coating for reducing porosity.
Nickel on tile	varied thickness of coatings for decorative purposes.
Nickel on glass fibers	continuous coating for imparting electrical conductivity.
Iron on glass fibers	continuous coating for special uses.
Tungsten on steel	dies coated for abrasion resistance.
Silver on stainless steel	study of compounds and methods.
Chromium on copper	oxidation resistant coatings.
Chromium and nickel alloys	high temperature oxidation resistance.
Nickel on teflon	for electrical purposes.

115° F; and its decomposition point is about 356° F;.

Control—With gas plating equipment it's possible to vary the characteristics of the finished metal plate to meet any of the usual conditions required of conventional electroplated products.

Manufacturer of precision industrial equipment, for example, reported his plant gas plated surfaces with Vickers hardness of from 193 to 201, had tensile strength of 90,000 psi and elongation of 15 per cent.

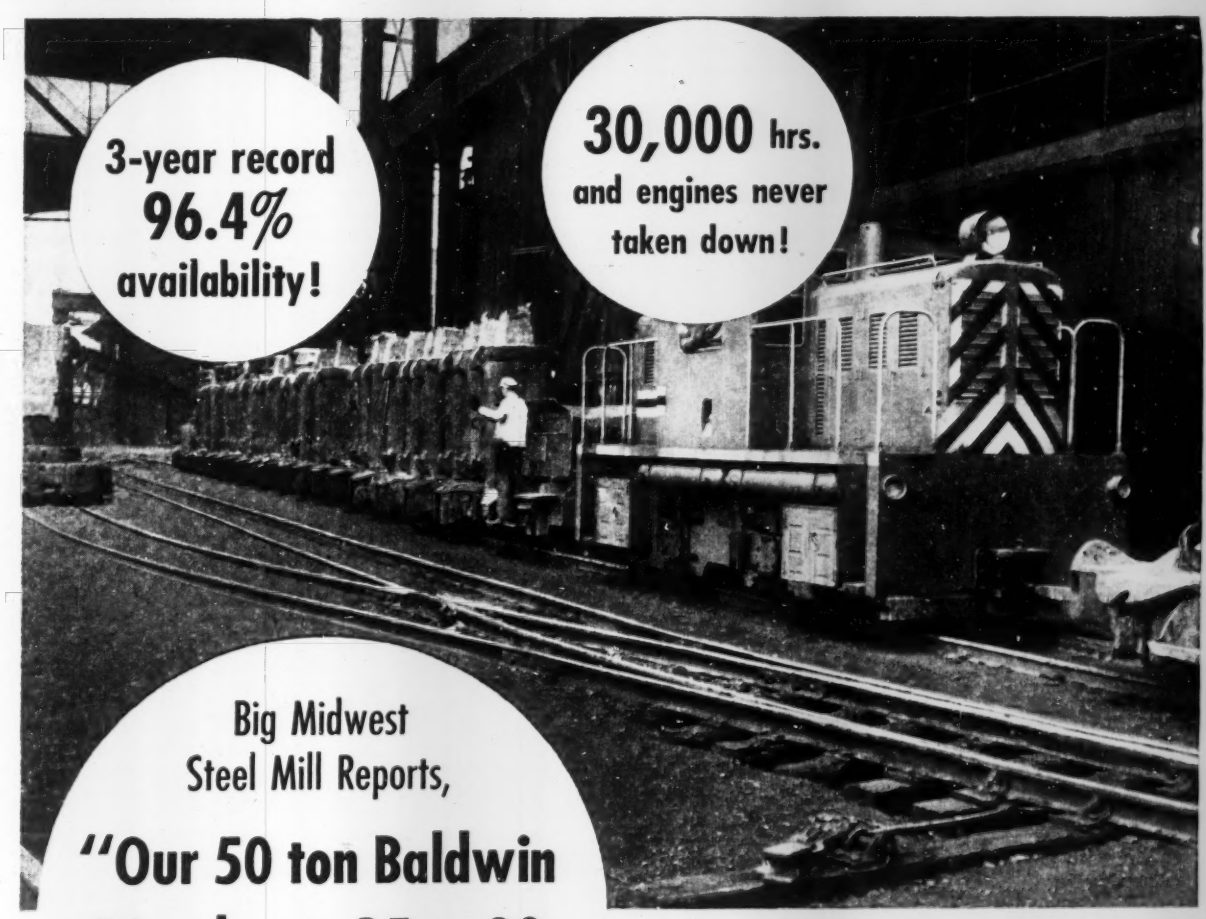
Where process was used to provide extreme corrosion resistance inside piping and other equipment, samples plated on copper, iron and aluminum showed good mechanical adherence. Plate couldn't be peeled from samples even after cutting. Microscopic examination in vicinity of a flow revealed no excessive attack by corrosion at plate substrate interface.

How It Compares—As a supplement to electroplating, gas plating has several advantages. They include: 1. Non-conductors of electricity, such as paper, plastic and tile, can be plated. 2. Irregular surfaces and the inside of objects can be plated without special equipment. 3. Speed of process is evidenced by fact that in less than one hour over 13 pounds of nickel (about 1/32 inch thick) were deposited on a mold facing with diameter of about 30 inches.

Other advantages include: Process makes possible straight-line, continuous plating of such materials as wire, screen, metal sheet, plate and cable; and in plating of powder metal parts, entrapment of plating solutions experienced in wet methods is avoided. In fact, penetration of pores and interstitial deposition may enhance physical properties.

Compared to electroplating, process is faster and requires less manpower and man hours for operation and control. Used gases may be vented to air or burned, and economies can be realized by recycling carbonyls or other metal compounds used.

One of the big advantages of gas plating as developed by Commonwealth is elimination of hydrogen embrittlement, a defect that sometimes occurs in wet-plated metals.



Big Midwest Steel Mill Reports,

"Our 50 ton Baldwin Diesel gets 25 to 30 heats out on time every day!"

When it costs hundreds of dollars for every delay of a minute in getting a heat out and the ingots to the blooming mills and soaking pits, efficient, dependable locomotives are indispensable to a steel mill. A major steel mill in the midwest reports a remarkable record of money-saving performance by their Baldwin industrial diesel-electric locomotive:

"Our 50-ton Baldwin replaced two steam locomotives on the hot line moving ingots to the blooming mills and soaking pits. We tap 8 to 10 heats a shift, three shifts a day. The heats run as much as 150 tons, making many of the loads for the Baldwin 594 tons which theoretically would require a 32"„ heavier diesel. But this Baldwin has handled *every* job 24 hours a day for over 3 years in spite of the extreme heat, bad curves and rough track conditions on this run. It is taken off the job each week two hours for inspection and lubrication. No major repairs have been necessary during 30,000 hours of operation."

In mine or mill, you, too, can depend on similar economy and dependability by switching to and with Baldwin Industrial locomotives.

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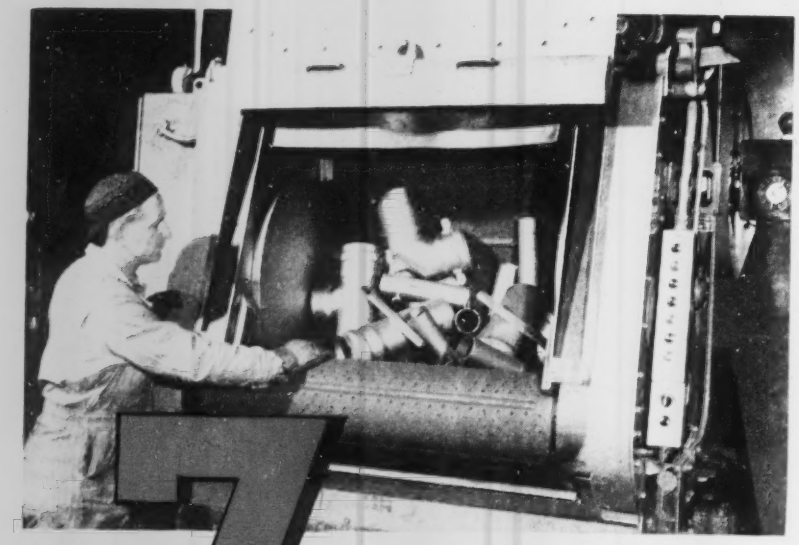
INDUSTRIAL LOCOMOTIVES



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WHEELABRATOR®
AIRLESS BLAST CLEANING
results in **7** *big advantages for weldment producer*

RESULTS

1. Improved quality of product.
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7. Time and cost savings will quickly pay for equipment.

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THE PRODUCT: Welded fittings and couplers for sprinkler irrigation, fabricated of 14 gauge tubing, 2" to 6" in diameter, from 6" to 24" in length and weighing up to 15 lbs. each.

THE PROBLEM: To remove mill scale, welding flux and spatter and to prepare the surface for subsequent hot dip galvanizing or bright zinc electroplating. Manual airblasting followed by pickling was slow, costly and unable to meet production.

THE SOLUTION: Installation of Wheelabrator airless blast cleaning equipment resulted in the benefits shown at left.

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509 S. Byrkit St., Mishawaka, Ind.
Wheelabrator® AIRLESS BLAST CLEANING
WORLD'S LARGEST BUILDERS OF AIRLESS BLAST CLEANING EQUIPMENT

Longer Cutting Oil Life

AS RECENTLY proved at Yale & Towne Mfg. Co.'s Philadelphia plant, useful life of soluble cutting oils can be extended up to 700 per cent with the use of new additives which inhibit bacterial growth.

During summer months, cutting oil rancidity and breakdown were encountered after three days operation on one drill press. At the recommendation of their coolants supplier, Yale & Towne tried a new additive developed by the West Disinfecting Co., Long Island City, N. Y.

The additive extended the useful life of the cutting oil from three days to three weeks, at the same time preventing characteristic rancid odor of deteriorated cutting oil.

Chemically, this cutting oil additive is a combination of chlorinated and non-chlorinated phenols with an organic sequestering agent which promotes the effectiveness of the product in the presence of iron.

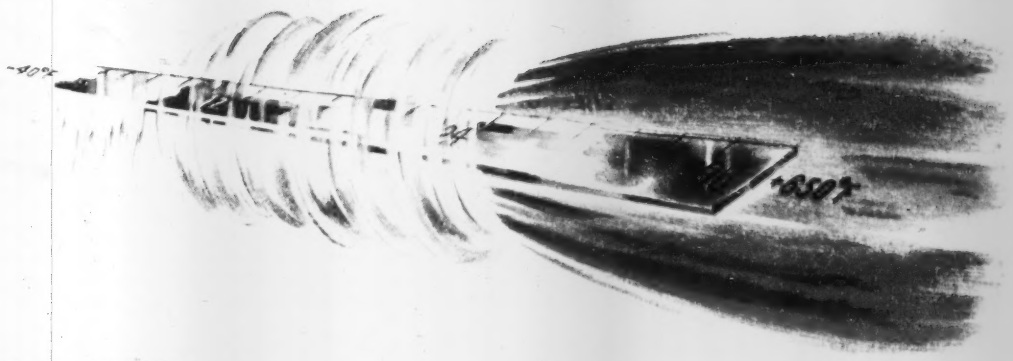
What Happens — When cutting oils break down they develop an offensive odor in addition to the loss of their lubricating and cooling properties. Odor results from bacterial decomposition and liberation of hydrogen sulfide and sulphur dioxide due to the heat of the cutting operation.

Cutting oil additives are not expensive. For example, the additive, manufactured by West Co., costs less than ½ cent per gallon of cutting oil used.

Fiber Handbook

A 12-page illustrated catalog, which also serves as a handbook for engineers using its products, has just been issued by Continental-Diamond Fibre Co., Newark, Del.

The catalog describes the products and many of their uses, and also contains detailed technical data in tabular form for reference. Among others, three important sheet grades of Diamond vulcanized fiber, with available sheet sizes, thicknesses and colors are described along with three fiber specialties tubing, rods and receptacles. Designated as Catalog GF-54, copies may be obtained by writing to the company.



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...it may hold an idea YOU can use!

You can almost *see* the metal *wanting* to protest. Super-frozen by arctic cold at the intake. Super-roasted at the outlet, only a yardstick's length away. And rotating 10,000 times a minute miles high in the air in an aircraft jet engine.

The Jet Division has a broad knowledge about commercial metals, including some you may not have used yet. We also know a lot about combinations of metals and how to make one work happily with another to lick once-insurmountable problems in unusual applications. We can also engineer and produce unusual assemblies that use these metals.

The know-how and facilities the Jet Division has built up to solve problems for jet-engine builders can be adapted to *your* product . . . present or planned.

Tell us what you have in mind . . . we'll gladly work out the details with your designers and engineers.

JET DIVISION

Thompson Products, Inc.

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Handling: Small Production Parts Bench to Bench Without Trucking

ALWAYS

- at the right work bench
- at the right time for the operation
- at the right level to receive or discharge work parts

THE ALLIED 2-28 CONVEYOR

A traveling, stock conveyor that carries diversified small work parts to and from points of operations. It goes here and there smoothly, tucked away in small spaces; passes work benches at proper level for discharging and receiving parts. It eliminates hand traveling and confusion of distributing parts to various, separated points of operation.

The 2-28 is an interesting conveyor and it steps up production. Ask us about it for your plant.

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NON-FLUID OIL is the ideal lubricant for ball and roller bearings because it is strictly neutral and free from any tendencies to develop fatty acids which corrode and pit the bearings.

NON-FLUID OIL prolongs the life of ball and roller bearings and meets the most exacting standards of bearing engineers. It "stays alive" longer than ordinary greases, retaining its high lubricating properties essential to protection of highly polished steel bearing surfaces.

NON-FLUID OIL provides dependable lubrication over the widest temperature range and outlasts ordinary greases many times—assuring worthwhile savings in lubricant and bearing replacement cost.

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NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture.

CALENDAR
OF MEETINGS

October 19-21. American Standards Association: Annual meeting, Waldorf-Astoria hotel, New York. Association address: 70 E. 45th St., New York 17. Secretary: Vice Adm. G. F. Hussey Jr., USN (Ret.).

October 19-22. Society of Industrial Packaging & Materials Handling Engineers: Annual national exposition, competition and technical short course, Mechanics Bldg., Boston. Society address: 20 W. Jackson Blvd., Chicago 4. Secretary: J. W. McReynolds.

October 19-23. American Society of Civil Engineers: Annual meeting, Statler hotel, New York. Society address: 33 W. 39th St., New York 18. Executive secretary: Col. William N. Carey.

October 19-23. National Metal Congress & Exposition: Public auditorium, Cleveland. Information: W. H. Eisenman, secretary, American Society for Metals, 7301 Euclid Ave., Cleveland 3.

October 19-23. American Society for Metals: Annual meeting, Hotel Statler, Cleveland. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

October 19-23. American Welding Society: Annual meeting, Hotel Cleveland, Cleveland. Society address: 33 W. 39th St., New York 18. Executive secretary: J. C. Magrath.

October 19-23. American Institute of Mining & Metallurgical Engineers: Fall technical session, Hotel Allerton, Cleveland. Institute address: 29 W. 39th St., New York 18. Secretary: Edward H. Rohe.

October 19-23. Society for Nondestructive Testing: Annual meeting, Hotel Hollenden, Cleveland. Society address: Box 710, Evanston, Ill. Secretary: Philip B. Johnson.

October 19-23. National Safety Council: National safety congress and exposition, Conrad Hilton, Congress, Morrison, Hamilton, La Salle and Palmer House hotels, Chicago. Council address: 425 N. Michigan Ave., Chicago 11. General secretary: R. L. Forney.

October 20. American Society of Safety Engineers: Annual meeting, Conrad Hilton hotel, Chicago. Society address: 425 N. Michigan Ave., Chicago 11. Secretary: J. B. Johnson.

October 21. American Iron & Steel Institute: Birmingham regional technical meeting, Hotel Thomas Jefferson, Birmingham. Institute address: 350 Fifth Ave., New York 1. Secretary: George S. Rose.

October 21-22. Steel Shipping Container Institute Inc.: Fall meeting, Hotels Pierre and Hampshire House, New York. Institute address: 600 Fifth Ave., New York 20. Secretary: L. B. Miller.

October 21-23. Grinding Wheel Institute and Abrasive Grain Association: Combined fall meeting, Statler hotel, Buffalo. Information: Hunter-Thomas Associates, 2130 Keith Bldg., Cleveland.

October 22. National Industrial Conference Board Inc.: Meeting of board members and special conference on guaranteed wages and employment, Hotel Waldorf-Astoria, New York. Board address: 247 Park Ave., New York 17. Secretary: Herbert S. Briggs.

October 22-24. American Ceramic Society: Pacific Coast regional meeting, Palace hotel, San Francisco. Society address: 2525 N. High St., Columbus 2, O. Secretary: Charles S. Pearce.

October 22-25. National Tool & Die Manufacturers Association: Annual meeting, Berkeley-Carteret hotel, Asbury Park, N. J. Association address: 907 Public Square Bldg., Cleveland. Executive secretary: George S. Eaton.

October 23-24. National Noise Abatement Symposium: Armour Research Foundation of Illinois Institute of Technology, Chicago. Program chairman: George L. Bonvallet, Armour Research Foundation of Illinois Institute of Technology, 35 W. 33rd St., Technology Center, Chicago 16.

October 25-28. American Gear Manufacturers Association: Semi-annual meeting, Edgewater Beach hotel, Chicago. Association

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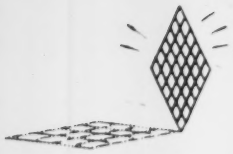

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address: 302 Empire Bldg., Pittsburgh 22. Executive secretary: John C. Sears.

October 26-27, National Association of Suggestion Systems: Annual convention. William Penn hotel, Pittsburgh. Association address: 122 S. Michigan Ave., Chicago 3.

October 26-28, National Lubricating Grease Institute: Annual meeting. Edgewater Beach hotel, Chicago. Institute address: 1618 J. C. Nichols Parkway, Kansas City 12, Mo. Secretary: Harry F. Bennett.

October 26-29, American Gas Association: Annual convention. Kiel Auditorium, St. Louis. Association address: 420 Lexington Ave., New York 17. Secretary & convention manager: Kurwin R. Boyes.

October 28-30, American Society of Body Engineers, Inc.: Annual technical convention. Rackham Memorial Bldg., Detroit. Society address: 100 Farnsworth Ave., Detroit 2. Assistant secretary: Walter Holding.

October 28-30, American Management Association: Conference on manufacturing. Bellevue-Stratford hotel, Philadelphia. Association address: 330 W. 42nd St., New York 36. President: Lawrence A. Appley.

October 29-30, National Industrial Conference Board, Inc.: Special conference on atomic energy. Hotel Waldorf-Astoria, New York. Board address: 247 Park Ave., New York 17. Secretary: Herbert S. Briggs.

October 29-30, Society of Automotive Engineers: International production meeting. Royal York hotel, Toronto, Ont. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

October 29-30, American Foundrymen's Society, Michiana and Central Indiana Chapters; and Purdue University, Dept. of General Engineering: Metals casting conference. Memorial Union Bldg., Purdue U., Lafayette, Ind. Information: C. T. Marek, Dept. of General Engineering, Purdue University, W. Lafayette, Ind.

October 29-30, American Society of Mechanical Engineers and American Institute of Mining & Metallurgical Engineers: Annual joint fuels conference. Conrad Hilton hotel, Chicago. Information: J. R. Mechel, Commonwealth Edison Co., 72 W. Adams St., Chicago 90.

October 29-November 1, Automotive Parts Rebuilders Association: Fall meeting and exhibit. Hotel Sherman, Chicago. Association address: 220 S. State St., Chicago 4. Executive secretary: Jack O'Sullivan.

October 30, Eastern States Blast Furnace & Coke Oven Association and Blast Furnace & Coke Oven Association of the Chicago District: Annual joint meeting. Hotel Statler, Cleveland. Information: J. E. Allen, Central Fes. & Docks, American Steel & Wire Div., U. S. Steel Corp., 2650 Broadway Ave., Cleveland 13.

October 30-31, Industrial Council on Development of Electrical Manufacturing Industry: Rensselaer Polytechnic Institute, Troy, N. Y. Information: Dr. Ray Palmer Baker, Director of the Industrial Council, Rensselaer Polytechnic Institute, Troy, N. Y.

October 30-31, American Society of Tool Engineers: Semi-annual board meeting. Dayton Biltmore hotel, Dayton, O. Society address: 10700 Puritan Ave., Detroit 21. Executive secretary: H. E. Conrad.

October 30-31, Southern Ohio Section, National Open Hearth Committee, American Institute of Mining & Metallurgical Engineers: Fall meeting. Deshler-Hilton hotel, Columbus, O. Committee address: Rm. 912, 29 W. 39th St., New York 18. Secretary-treasurer: Ernest Kirkendall.

November 1-6, American Society of Sanitary Engineering: Annual meeting. Hotel Hollenden, Cleveland. Society address: 4716 Ewing Ave. S., Minneapolis. Secretary: Walter A. Dunn.

November 2-3, Magnesium Association: Annual meeting. Biltmore hotel, New York. Association address: 122 E. 42nd St., New York 17. Assistant secretary: Martha I. Hansen.

November 2-4, Society of Automotive Engineers: National transportation meeting. Hotel Conrad Hilton, Chicago. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

November 2-6, American Institute of Electrical Engineers: Fall general meeting. Hotel Muehlebach, Kansas City, Mo. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

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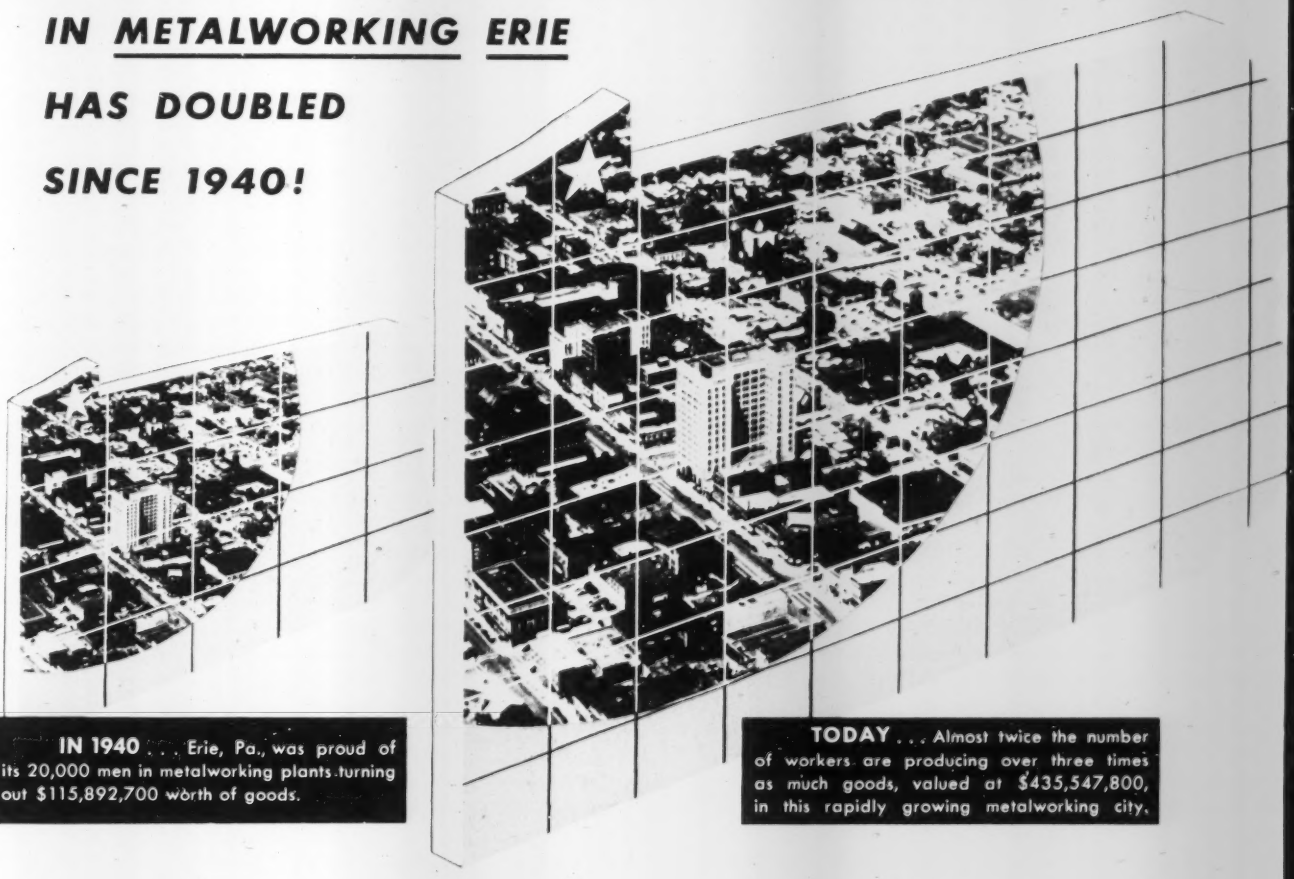

IN 1940 . . . Erie, Pa., was proud of its 20,000 men in metalworking plants turning out $115,892,700 worth of goods.

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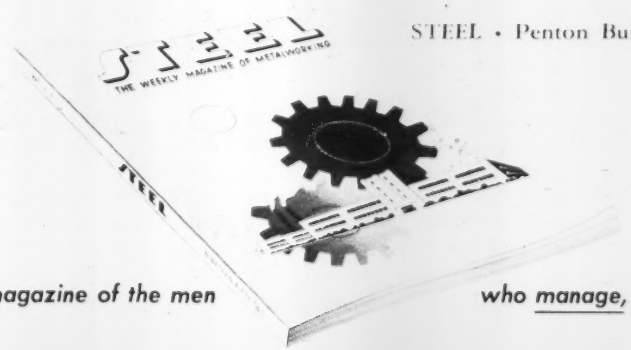

The magazine of the men who manage, operate and buy for the Metalworking industry

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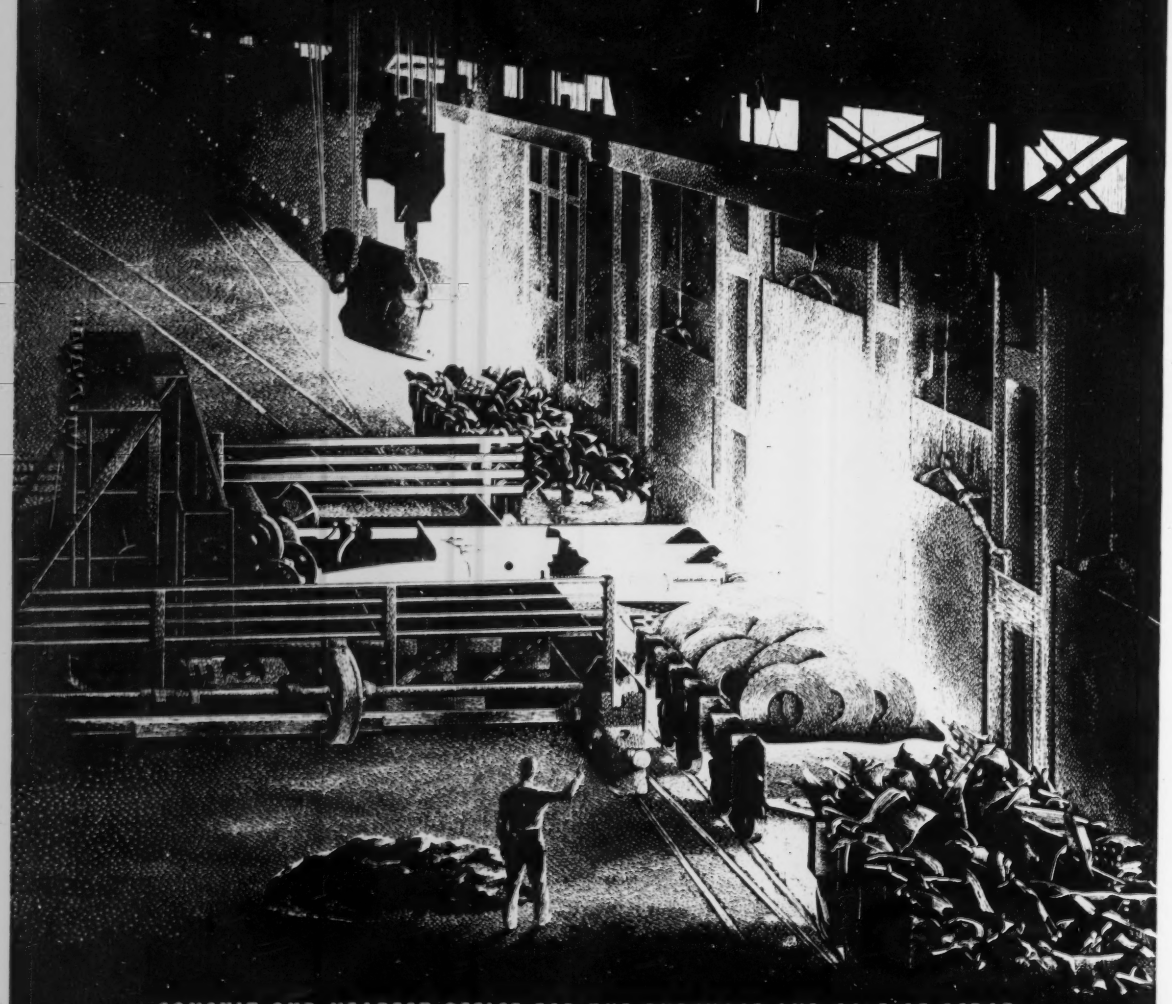

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

STEEL
October 19, 1953

Market Outlook

BUSINESS is "looking up" in the steel industry.

The inventory reduction that started among steel consumers during the summer appears to be about over. They have lowered their inventories about as far as is practical in light of the high over-all business conditions. Now they must quit living off inventories and come into the market for sufficient steel to supply their present high needs. This means that a good many steel users probably will be ordering more steel then they have been recently.

CUT TOO MUCH—In some cases, consumers feel they have cut their steel inventories too sharply.

The approaching end of inventory reduction is being marked by a decline in cutbacks and cancellations of steel orders.

Among the reasons the decline in demand for steel has not gone any further are continued heavy expenditures for national defense, a continued good level of consumer expenditures and a continued growth in the country's population.

The slight decline that hit steel demand this last summer stemmed to a great degree from the fact that the growing steel capacity and supply caught up with demand about the time the Korean war ended. Ending of the war dispelled fears of shortages and brought stretchouts of defense programs.

ON TAP—Business did not go to pieces, however, and it shouldn't, for there is a big reservoir of needs in this country: Many school buildings will have to be built to accommodate the growing school population. Highways, bridges and streets are woefully inadequate for the increasing amount of automobile traffic. Most everyone needs or wants more personal goods than he now has.

A LOOK AHEAD—The largest consumer of steel, the automobile industry, which will produce close to 6 million cars this year, will make and sell 5.5 million cars next year, confidently says L. L. Colbert, president, Chrysler Corp.

Even though a 5.5-million-car year would be a good one, it suggests that steel production will not have to be at capacity levels. But that doesn't worry everybody. Republic Steel Corp.'s chairman, T. M. Girdler, and president, Charles M. White, say that, "As a matter of fact, capacity operations are expensive operations. Many of the costs that result from peak operations are decreased or eliminated at a lower rate."

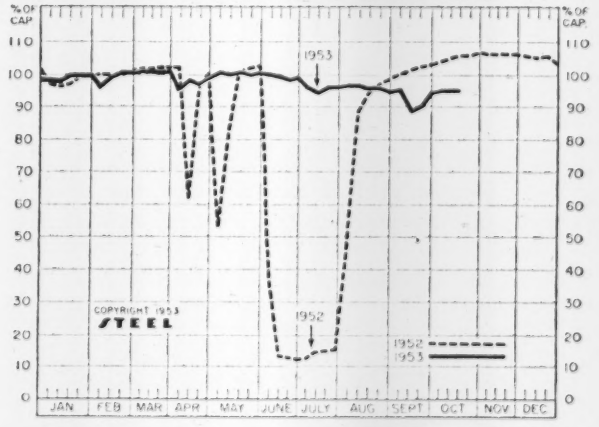
MEETING A CHALLENGE—The moderate decline in business is not alarming the metalworking industry. The industry is alert to the situation, but most of its members are philosophically accepting the decline as one that was expected and one that will infuse health into our competitive system.

ENCOURAGING—The improved outlook for steel demand is not limited to the fourth quarter. A considerable number of users are indicating that their requirements in the first quarter of next year are going to be up.

Another indication that the decline in steel demand may have been arrested is the further strengthening of the steelmaking scrap market.

OUTPUT STEADY—While demand for some forms of finished steel is less than for others, the over-all demand was sufficient to keep steel ingot production at a steady pace of 95 per cent of capacity during the week ended Oct. 17.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended Oct. 17	Change	Same 1952	Week 1951
Pittsburgh	96.5	— 1*	107	100.5
Chicago	97.5	0*	109.5	95.5
Mid-Atlantic	97	0	99	99
Youngstown	105	0	106	103
Wheeling	94.5	— 2.5	98	101.5
Cleveland	98.5	— 2.5*	107.5	101
Buffalo	106.5	0	106.5	104
Birmingham	96.5	0	102	102
New England	89	+ 9	94	85
Cincinnati	89.5	— 3.5	93	104
St. Louis	100.5	— 2.5	110	98
Detroit	100.5	+ 0.5	109.5	104.5
Western	102	0	104	106
Estimated National Rate	95	0	105.5	100.5

*Change from preceding week's revised rate.

Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

The Metalworking Outlook—p. 37 The Technical Outlook—p. 85

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Oct. 13

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.400	Bars, H.R., alloy	$8.675	Strip, C.R., stainless, 430 (lb)	$0.415	Tin plate, hot-dipped, 1.25 lb	$8.433
Rails, light, 40 lb	5.767	Bars, H.R., stainless, 303 (lb)	0.418	Strip, H.R., carbon	5.013	Tin plate, electrolytic, 0.25 lb	7.133
Tie Plates	5.125	Bars, H.R., carbon	4.850	Pipe, black, buttweld (100 ft)	14.454	Black plate, can making quality	6.233
Axles, railway	7.250	Bars, reinforcing	4.775	Pipe, galv., buttweld (100 ft)	17.731	Wire, drawn, carbon	7.713
Wheels, freight car, 33 in. (per wheel)	47.000	Bars, C.F., carbon	7.860	Pipe, line (100 ft)	141.360	Wire, drawn, stainless, 430 (lb)	0.545
Plates, carbon	4.550	Bars, C.F., alloy	11.075	Casing, oil well, carbon (100 ft)	149.516	Bale ties (bundle)	5.653
Structural Shapes	4.383	Bars, C.F., stainless, 302 (lb)	0.433	Casing, oil well, alloy (100 ft)	214.113	Nails, wire, 8d common	7.488
Bars, tool steel, carbon (lb)	0.415	Sheets, H.R., carbon	4.765	Tubes, boiler (100 ft)	‡	Wire, barbed (80-rod spool)	6.847
Bars, tool steel, alloy, oil hardening die (lb)	0.505	Sheets, C.R., carbon	5.904	Tubing, mechanical, carbon (100 ft)	‡	Woven wire fence (20-rod roll)	16.174
Bars, tool steel, H.R. alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, Co 6.60 (lb)	1.135	Sheets, galvanized	6.945	Tubing, mechanical, stainless, 304 (100 ft)	161.193	‡Not available.	
Bars, tool steel, H.R. alloy, high speed W 18, Cr 4, V 1 (lb)	1.730	Sheets, C.R., stainless, 302 (lb)	0.548				
		Sheets, electrical	9.183				
		Strip, C.R., carbon	7.329				

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Oct. 13 1953	Oct. 6 1953	Month Ago	Sept. Average
(1947-1949=100)	141.5	141.7	141.7	141.7

STEEL's FINISHED STEEL PRICE INDEX

	Oct. 15 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	189.38	189.38	189.38	181.31	151.86
Index in cents per lb	5.130	5.130	5.130	4.912	4.114

STEEL's ARITHMETICAL PRICE COMPOSITE*

	Oct. 15 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT	$115.54	$115.54	$115.56	$110.98	$95.05
No. 2 Fdry. Pig Iron, GT.	56.54	56.54	56.54	55.04	46.50
Basic Pig Iron, GT	56.04	56.04	56.04	54.66	46.29
Malleable Pig Iron, GT.	57.27	57.27	57.27	55.77	47.20
Steelmaking Scrap, GT.	32.50	31.83	37.50	43.00	43.33

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Oct. 15 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	4.15	4.15	3.95	3.45
Bars, H.R., Chicago	4.15	4.15	4.15	3.95	3.35
Bars, H.R., del. Philadelphia	5.302	5.302	5.302	4.502	3.79
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85	3.275
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85	3.25
Shapes, Std., Chicago	4.10	4.10	4.10	3.85	3.25
Shapes, deld., Philadelphia	4.38	4.38	4.38	4.13	3.48
Plates, Pittsburgh	4.10	4.10	4.10	3.90	3.50
Plates, Chicago	4.10	4.10	4.10	3.90	3.40
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.35	3.75
Plates, Sparrows Point, Md.	4.10	4.10	4.10	3.90	3.45
Plates, Claymont, Del.	4.55	4.55	4.55	4.35	3.95
Sheets, H.R., Pittsburgh	3.925	3.925	3.925	3.775	3.275
Sheets, H.R., Chicago	3.925	3.925	3.925	3.775	3.25
Sheets, C.R., Pittsburgh	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Chicago	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Detroit	4.975	4.975	4.975	4.775	4.20
Sheets, Galv., Pittsburgh	5.275	5.275	5.275	5.075	4.40
Strip, H.R., Pitts.	3.975-4.425	3.975-4.425	3.975-4.425	3.75-4.225	3.50
Strip, H.R., Chicago	3.925	3.925	3.925	3.725	3.25
Strip, C.R., Pittsburgh	5.45-5.95	5.45-5.95	5.45-5.95	5.10-5.80	4.00
Strip, C.R., Chicago	5.70	5.70	5.70	5.35	4.00
Strip, C.R., Detroit	5.45-6.05	5.45-6.05	5.45-6.05	5.30-6.05	4.20
Wire, Basic, Pitts.	5.475-5.525	5.475-5.525	5.475-5.525	5.10-5.225	4.325
Nails, Wire, Pittsburgh	6.35-6.55	6.35-6.55	6.35-6.55	6.20-6.35	5.775
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$6.70

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$75.50	$75.50	$75.50	$70.50	$61.00
Wire rods, $\frac{7}{32}$-$\frac{9}{32}$", Pitts.	4.525	4.525	4.525	4.325	3.775

PIG IRON, Gross Ton	Oct. 15 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$55.50	$47.00
Basic, Valley	56.00	56.00	56.00	54.50	46.00
Basic, deld. Phila.	60.75	60.75	60.75	59.25	50.17
No. 2 Fdry, Pitts.	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	55.00	44.75
No. 2 Fdry, Valley	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, deld. Phila.	61.25	61.25	61.25	59.75	50.67
No. 2 Fdry, Birm.	52.88	52.88	52.88	51.38	43.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	58.93	49.09
Malleable, Valley	56.50	56.50	56.50	55.00	46.50
Malleable, Chicago	56.50	56.50	56.50	55.00	45.00
Ferromanganese, Duquesne	200.00†	200.00†	200.00†	228.00*	163.00*

*78-82% Mn, per gross ton, Etna, Pa. †74-76% Mn, per net ton.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pitts.	$36.50	$34.50	$40.50	$41.00	$42.75
No. 1 Heavy Melt, E. Pa.	31.50	31.50	36.50	41.50	43.25
No. 1 Heavy Melt, Chicago	29.50	29.50	35.50	42.50	41.75
No. 1 Heavy Melt, Valley	34.50	33.50	36.50	44.00	42.75
No. 1 Heavy Melt, Cleve.	31.50	30.50	33.50	43.00	42.25
No. 1 Heavy Melt, Buffalo	33.50	33.50	39.50	43.00	48.25
Rails, Rerolling, Chicago	42.50	42.50	52.00	52.50	64.50
No. 1 Cast, Chicago	32.50	32.50	35.00	48.50	70.50

COKE, Net Ton					
Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$14.50
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	17.00	17.00
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	20.40

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99% plus, ingots 21.50, pigs 20.00, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 600 lb or more.

Aluminum Alloy: No. 13, 12% Si, 22.30; No. 43, 5% Si, 23.10; No. 142, 4% Cu, 24.40; No. 195, 4½% Cu, 0.8% Si, 23.70; No. 214, 3.8% Mg, 24.40; No. 356, 7% Si, 0.3% Mg, 23.20.

Antimony: R.M.M. brand, 99.5% 34.50, Lone Star brand, 35.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 25.50-26.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

DAILY NONFERROUS PRICE RECORD

	Price Oct. 15	Last Change	Previous Price	Sept. Avg.	Aug. Avg.	Oct. 1952 Avg.
Copper	30.00-30.00	Aug. 19	28.50-30.00	29.500	29.375	24.500
Lead	13.50	Sept. 16	13.80	13.540	13.800	14.226
Zinc	10.00	Sept. 11	10.50	10.180	11.000	13.269
Tin	79.50	Oct. 14	81.00	82.410	80.530	121.500
Nickel	60.00	Jan. 14	56.50	60.000	60.000	56.500
Aluminum	21.50	July 15	20.50	21.500	21.500	20.000
Magnesium	24.00	Mar. 9	24.50	27.000	27.000	24.500

Quotations in cents per pound based on: Copper, deld. Conn. Valley; Lead, common grade, deld. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, deld. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99% plus, deld.; Magnesium, 99.8%, Freeport, Tex.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $2.00 per lb deld.

Cobalt: 97.99%, $2.40 per lb for 550 lb keg; $2.42 per lb for 100 lb case; $2.47 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 29.00-30.00 deld. Conn. Valley, 29.125-30.125 deld. Midwest; Lake 30.125 deld. Fire refined 29.75 deld.

Germanium: 99.9%, $265 per lb nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $165-$175 per troy oz.

Lead: Common 13.50, chemical 13.70, corroding 13.90. St. Louis, New York basis, add 0.20.

Lithium: 98%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8% standard ingots 27.00, 10,000 lb or more, f.o.b. Freeport, Tex. Sticks, 1-in. dia., 45.00, 100 to 1999 lb.

Magnesium Alloys: AZ91B 30.50; AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more.

Mercury: Open market, spot, New York, $184-$186 per 76-lb flask.

Molybdenum: Powder, 99% hydrogen reduced $3.10 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots, 0.5 addition to cast iron 60.00; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $140-$150 per troy oz. nom.

Palladium: $22-$24 per troy oz.

Platinum: $91-$93 per troy oz. from refineries.

Radium: $16.00-$21.50 per mg. radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $75-$80 per troy oz.

Selenium: 99.5%, $1.25-$1.75 per lb.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $12.45 per lb; powder $32.5 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, New York, 79.50.

Titanium: Sponge, 99.3 plus %, $5 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $5.35 per lb f.o.b. shipping point; less than 1000 lb $5.50; 99+% hydrogen reduced, $6.30. Treated ingots $10.43.

Zinc: Price western 10.00, brass special 10.25, intermediate 10.50, E. St. Louis, freight allowed over 0.50 per pound. High grade 11.35, special high-grade 11.50, die casting alloy ingot 14.50, deld.

Zirconium: Sponge $14.00 per lb; powder 100 lb or more $7.00; less than 100 lb $8.00.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston Alloys 21.00-21.50; No. 12 foundry alloy (No. 2 grade) 20.00-20.50; 5% silicon alloy, 0.60 Cu max., 22.75-23.25; 13 alloy, 0.60 Cu max., 22.75-23.25; 195 alloy 21.50-22.50; 108 alloy 21.00-21.50; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 21.00-22.50; grade 2, 19.50-21.00; grade 3, 18.50-20.00; grade 4, 17.00-18.00.

Brass Ingot: Red brass, No. 115, 24.50; tin bronze, No. 225, 35.25; No. 245, 29.50; high-leaded tin bronze, No. 305, 28.75; No. 1 yellow, No. 405, 20.75; manganese bronze No. 421, 25.25.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 31.50; AZ91C, 32.00; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l., 37.03. Magnet wire deld., 15,000 lb or more 41.83; l.c.l., 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $18.50 per cwt; pipe, full coils $18.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 100,000 lb and over, f.o.b. mill) Sheets $15; sheeted mill plate, $12; strip, $15; wire, $10; forging billets, $6; hot-rolled and forged bars, $6.

ZINC

Sheets 23.00, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50, f.o.b. mill, 36,000 lb and over. Plates 19.50-22.25.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	86.5	67.5	92.5
Strip, C.R.	92.5	70.5	98.5
Plate, H.R.	84.5	66.5	90.5
Rod, Shapes	82.5	64.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks	...	60.0	...

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range Inches	Widths or Diameters, Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	33.9	...	...
0.135-0.096	12-48	34.4	...	...
0.095-0.077	12-48	35.1	32.7	37.5
0.076-0.061	12-48	35.7	32.9	37.7
0.060-0.048	12-48	36.1	33.2	38.1
0.047-0.038	12-48	36.6	33.6	38.4
0.037-0.030	12-48	37.0	34.0	39.1
0.029-0.024	12-48	37.6	34.3	39.6
0.023-0.019	12-36	38.3	35.1	40.4
0.018-0.017	12-36	39.1	35.7	41.3
0.016-0.015	12-36	40.0	36.5	42.5
0.014	12-24	41.0	37.5	43.8
0.013-0.012	12-24	42.1	38.2	44.8
0.011	12-24	43.1	39.4	46.4
0.010-0.0095	12-24	44.3	40.5	48.0
0.009-0.00-5	12-24	45.6	41.9	50.0
0.008-0.0075	12-24	47.1	43.1	51.8
0.007	12-18	48.6	44.6	54.1
0.006	12-18	50.2	46.0	59.1

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

ALUMINUM

Plates and Circles: Thickness 0.250-3.0 in., widths or diameters 24-60 in., lengths 72-240 in.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	32.4	36.3
50S-F	33.5	37.4
4S-F	34.5	39.1
52S-F	36.2	40.9
61S-T6	37.4	41.5
24S-T4*	39.3	45.4
75S-T6*	47.1	53.7

* Widths or diameters 24-48 in., lengths 72-180 in.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	Round 11S-T3	Round 17S-T4	Hexagonal 11S-T3	Hexagonal 17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.9	46.2	...	56.8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Forging Stock: Round, Class 1, 42.05-32.76, in specific lengths 36-144 in., diameters 0.375-8 in.; rectangles and squares, Class 1, 49.2 to 37.6 in random lengths 0.375-4.0 in. thick, widths 0.750-10.0 in.

Industrial Roofing Sheet (0.032-in. thick): Flat, 42.75 in. wide, lengths 60-144 in., $2.838 to $6.816 per sheet. Corrugated, 35 in. wide, lengths 60-144 in., $2.862 to $6.874 per sheet.

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 108.00, 0.064-in. 81.00, 0.125-in. 71.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled, AZ31, 53.00, 20,000 lb or more 0.188-1.0 in. thick, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 60.00, 20,000 lb or more, ¼-in. thick, widths 24-48 in., lengths 60-144 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.38b	45.98c	....	48.44	26.000	26.000	25.250
Yellow brass	41.72	41.66	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.98	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	40.07	52.80	48.92	18.250	18.000	17.500
Commercial Bronze, 90%	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	55.36	59.43g	57.69	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%	66.58	67.08	67.08	68.23	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	70.11e	25.125	24.875	24.125
Manganese Bronze	49.48	43.62	54.06	....	18.250	18.000	17.500
Muntz Metal	43.96	39.77	....	....	18.625	18.375	17.875

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 2S clipping 12.00; low copper clippings 9.00, mixed clippings 9.00; old sheet 8.00-8.50; borings and turnings 5.00-5.50; pistons and struts 6.00; crankcases 8.00; industrial castings 8.00-8.50.

Copper and Brass: Heavy copper and wire, No. 1 22.00; No. 2 copper 20.50; light copper 17.50-18.00; No. 1 composition red brass 16.00-16.50; No. 1 composition turnings 15.50-16.00; mixed brass turnings 9.50; new brass clippings 17.50; No. 1 brass rod turnings 12.00; light brass 9.50-10.00; heavy yellow brass 11.50; new brass rod ends 14.00-14.50; auto radiators, unsweated 12.00; cocks and faucets 13.00; brass pipe 15.50.

Lead: Heavy 9.50-10.00; battery plate 5.25-5.75; linotype and stereotype 11.75; electrotype 10.50; mixed babbitt 12.00.

Magnesium: Clippings 20.00-21.00; clean castings 19.00-20.00; iron castings, not over 10% removable Fe, 18.00-19.00.

Monel: Clippings 26.00-28.00; old sheet 24.00-26.00; turnings 19.00-21.00; rods 26.00-28.00.

Nickel: Sheets and clips 70.00; rolled anodes 70.00; turnings 40.00; rod ends 70.00.

Tin: No. 1 pewter 40.00-45.00; block tin pipe 65.00-67.00; No. 1 babbitt 37.00-38.00.

Zinc: Old zinc, 3.50; new die cast scrap, 3.50; old die cast scrap, 3.25.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clipping 13.50-14.00; 51S, 52S clippings 13.50-14.00; 14S, 17S, 24S, clippings 12.50-13.00; mixed clippings 12.00-13.00; old sheet 9.50-10.50; old cast 9.50-10.50; clean old cable, free of steel 13.50-14.00; borings and turnings 10.00-11.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper, Brass: No. 1 copper 24.00; No. 2 copper 22.25; light copper 20.75; refinery brass (60% copper), per dry copper content 19.00; auto radiators 13.00 nom.

INGOT MAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 24.00-24.50, No. 2 copper 22.00-22.50; light copper 20.50-21.00; No. 1 composition borings 16.50-17.00; No. 1 composition solids 17.00-17.50; heavy yellow brass solids 13.00-13.50; yellow brass turnings 12.50-12.75; radiators 13.00-13.50.

PLATING MATERIALS

(F.o.b. shipping points, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $2.15 per lb.

Copper: Flat-rolled 45.04, oval 44.54, 2000-5000 lb; electrodeposited 39.78, cast 42.04, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb 98.5; 200-499 lb 97; 500-999 lb 96.5; 1000 lb or more 96.

Zinc: Bar 18.50, bar or flat top 17.50, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 2000 lb 29.00, over 2000 lb 28.75.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.000; 5000-35,900 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.500; 2,500 oz and over 77.375.

Sodium Cyanide: Egg, under 1000 lb 19.80, 1000-19,900 lb 18.80, 20,000 lb and over 17.80; granular, add 1.0 premium to above.

Sodium Stannate: Less than 100 lb 61.8; 100-900 lb 51; 700-1900 lb 48.5; 2000-5000 lb 46.7; 10,000 lb or more 45.6.

Stannous Chloride (Anhydrous): Less than 50 lb $1.49; 50 lb $1.47; 100-500 lb 81; 500-900 lb 97.6; 1000-1900 lb 95.2; 2000-4900 lb 91.5; 5000-19,000 lb 86.4; 20,000 lb and over 85.5, over $1.10.

Stannous Sulphate: Less than 50 lb $1.194; 50 lb 99.4; 100-1900 lb 87.4; 2000 lb and over 85.1.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

Nonferrous Metals

Government is a forceful factor in the metals market, even after considerable relaxation of controls. Federal authority is exerted from ore to finished goods

GOVERNMENT still stands as a forceful factor in the metals market. Despite the withering of the emergency-built system of direct control, Washington's authority over metals will be potent for a long time.

Cradle to Grave—Federal authority is exerted from ore to finished goods. Defense needs and their ramifications on materials supply are obvious. Defense Materials System operates to make sure contractors get enough steel, copper, aluminum and nickel for military goods. Stockpile operations take metal out of circulation. Contracts for developing high-cost mines make more available.

A number of less direct actions enter the picture too. Exploration and mining assistance, import duties and export controls, Interior department power policies, State department loan-making influence, legislation and legislative investigations are fragments in the changing market kaleidoscope and have a bearing on the prices you now pay or will pay for materials.

Surprise Entry—Another government department that's showing increased interest in metal companies and their operations is the Justice department. It brought suit in July to set aside a purchase contract for 600,000 tons of primary aluminum made by Alcoa and Aluminum Import Co. That suit is still pending.

Latest activity is a charge that two leading sellers of lead have violated the Sherman Antitrust Act. In filing suit against American Smelting & Refining Co. and St. Joseph Lead Co., Attorney General Herbert Brownell said, "The primary lead industry of the U. S. has been so dominated by the two defendants that no new producer has entered the industry for almost 35 years."

The Charges—The civil suit alleges A.S.&R. and St. Joe have restrained, attempted to monopolize and monopolized interstate and foreign trade in production and sale of primary lead. Since about 1920, the complaint charges, the two companies have been engaged in a continuing agreement to suppress and limit competition in the mining, smelting, refining and marketing of primary lead.

This has been accomplished, the complaint contends, by regulating production, exercising control over refining and marketing of competitors' production, joining with foreign producers to influence the movement of foreign lead into the U. S., and by these devices to have exercised control over price of primary lead in the U. S.

Effect from Afar

International affairs currently exert the strongest influence on a meandering market. From Trieste, Chile, British Guiana and Malaya come reports that find response as quickly as any stock exchange.

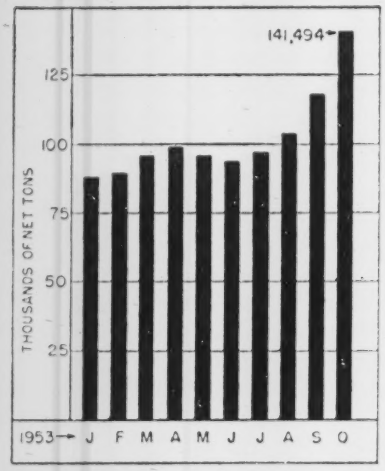
The Trieste hassle sent London markets skittering upwards nervously. In Chile, workers at Anaconda's huge (15,000 tons monthly) Chuquicamata copper mine struck last week, ignoring government pleas to hold off until delicate negotiations with the U. S. for purchase of up to 100,000 tons of copper for stockpile were concluded. Prospects of a long strike in Chile will keep copper price jacked up even longer.

In the 90,000-square-mile patch of South America called British Guiana, political upheavals threaten Aluminium Ltd.'s biggest bauxite operation. Since most of the bauxite is refined into alumina and aluminum in Canada and winter stocks have already been shipped, there would be little danger of production interruptions in Canada until well into next year.

In Malaya, tin producers want action taken to prevent economic chaos such as occurred in 1930. Norman Cleaveland, president, Pacific Tin Consolidated Corp., the only U. S. tin mining company operating in southeast Asia, said, "There are many indications that purchasing policies of some of the major users of tin are again being guided by an effort to force prices still lower." Continued Mr. Cleaveland . . . "Under shelter of ample government stockpiles, such speculative tactics now seem safer than ever. However, if such speculators again get caught short, as they were by the Korean War, the blame will doubtless again be placed on the mythical 'tin cartel' . . ."

ZINC STOCKS CLIMB

At smelters at start of month



Source: American Zinc Institute.

Aluminum Record Set

Second consecutive production record was set by primary aluminum in August. Unless dry weather of last fall repeats in the Northwest and Southeast, the 1953 high is yet to come. August output of 110,545 tons topped July's previous record by 1260 tons.

Shipments of aluminum products showed more decreases than increases though. Gains were registered in heat-treatable sheet and plate, extruded products, drawn and welded tubing and miscellaneous products. Declines showed in nonheat-treatable sheet and plate, foil, castings of all types, rod and bar, wire, electrical conductor and forgings.

Learning about Titanium

Hot extrusion of zirconium tubing is practical, experimental work by Allegheny Ludlum Steel Corp. indicates. The company feels that any product normally produced on steel mill equipment can be made of zirconium. Most of the company's present output is in strip, though small flats and some wire have been produced, and the company is expanding its production for atomic energy uses.

Nonferrous Briefs

- Phosphor copper in slab form is coming in from Britain at about eight to nine cents below U. S. prices.
- Copper scrap is moving higher as export buyers and brass mills compete for more metal.

SPENT A FORTUNE
to MAKE THIS INGOT INTO COIL

Six minutes after leaving its soaking pit at 2300° F., an ingot becomes a five-ton coil of hot-rolled steel. In that short time it passes through all the units that comprise Newport's new reversing hot mill: 2-Hi slabbing mill and edging mill; roller hearth furnace; 4-Hi stand and coiler furnaces; and finally, the runout tables and finish coiler. This modern, highly efficient facility is representative of the additions this 68-year-old firm is making to improve and expedite the many grades of steel which hundreds of users prefer to buy from Newport. Let us talk with you about your requirements.

PRODUCTS OF NEWPORT STEEL

- Hot Rolled Steel in Coil
- Hot Rolled Pickled Steel in Coil
- Electric Weld Line Pipe
- Hot Rolled Sheets
- Galvanized Sheets
- Galvannealed Sheets
- Colorbond Sheets
- Hot Rolled Pickled Sheets
- Electrical Sheets
- Alloy Sheets
- Roofing and Siding
- Eave Trough and Conductor Pipe
- Culverts

ECONOMICAL WATERAIL DELIVERY

Newport Steel is situated on the Mississippi-Ohio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to industrial areas throughout the Middle West and South.

Newport Steel

CORPORATION

NEWPORT, KENTUCKY

STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on page 139. Key to footnotes, page 141.

—SEMIFINISHED—

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 $86 00
Munhall,Pa. U5 59 00

INGOTS, Alloy (NT)
Detroit R7 $63 00
Fontana,Calif. K1 88 00
Midland,Pa. C18 62 00
Munhall,Pa. U5 62 00

BILLETS, BLOOMS & SLABS
Carbon Rerolling (NT)
Aliquippa,Pa. J5 $62 50
Bessemer,Pa. U5 62 00
Clairton,Pa. U5 62 00
Ensley,Ala. T2 62 00
Fairfield,Ala. T2 62 00
Fontana,Calif. K1 81 00
Gary,Ind. U5 62 00
Johnstown,Pa. B2 62 00
Lackawanna,N.Y. B2 62 00
Munhall,Pa. U5 62 00
So. Chicago,Ill. U5 62 00
So.Duquesne,Pa. U5 62 00

Carbon, Forging (NT)
Aliquippa,Pa. J5 $75 50
Bessemer,Pa. U5 75 50
Buffalo R2 75 50
Canton,O. R2 75 50
Clairton,Pa. U5 75 50
Cleveland R2 75 50
Conshohocken,Pa. A3 82 50
Detroit R7 78 50
Ensley,Ala. T2 75 50
Fairfield, Ala. T2 75 50
Fontana,Calif. K1 94 50
Gary,Ind. U5 75 50
Geneva,Utah C11 75 50
Houston S5 75 50
Johnstown,Pa. B2 75 50
Lackawanna,N.Y. B2 75 50
Los Angeles B3 94 50
Munhall,Pa. U5 75 50
Seattle B3 94 50
So.Chicago R2,U5,W14 75 50
So.Duquesne,Pa. U5 75 50
So.SanFrancisco B3 94 50

Alloy, Forging (NT)
Bethlehem,Pa. B2 $82 00
Buffalo R2 82 00
Canton,O. R2 82 00
Canton,O. T7 84 50
Conshohocken,Pa. A3 89 00
Detroit R7 84 00
Fontana,Calif. K1 101 00
Gary,Ind. U5 82 00
Houston S5 92 00
Ind.Harbor,Ind. Y1 82 00
Johnstown,Pa. B2 82 00
Lackawanna,N.Y. B2 82 00
LosAngeles B3 102 00
Massillon,O. R2 82 00
Midland,Pa. C18 82 00
Munhall,Pa. U5 82 00
So.Chicago,Ill. R2,U5,W14 82 00
So.Duquesne,Pa. U5 82 00
Struthers,O. Y1 82 00
Warren,O. C17 82 00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 $92 50
Canton,O. R2 92 50
Cleveland R2 92 50
Fontana,Calif. K1 114 50
Gary,Ind. U5 92 50
Massillon,O. R2 92 50
So.Chicago,Ill. R2 92 50
So.Duquesne,Pa. U5 92 50

SHEET BAR (NT)
Fontana,Calif. K1 $93 18

SKELP
Aliquippa,Pa. J5 3.85
Munhall,Pa. U5 3.75
Warren,O. R2 3.75
Youngstown R2, U5 3.75

WIRE RODS
AlabamaCity,Ala. R2 4.325
Aliquippa,Pa. J5 4.325
Alton,Ill. L1 4.70
Buffalo W12 4.325
Cleveland A7 4.325
Donora,Pa. A7 4.325
Fairfield,Ala. T2 4.325
Fontana,Calif. K1 5.325
Houston S5 4.925
Johnstown,Pa. B2 4.525
Joliet,Ill. A7 4.525
KansasCity,Mo. S5 4.863
LosAngeles B3 5.325
Minnequa,Colo. C10 4.775
Monessen,Pa. P7 4.725
No.Tonawanda,N.Y. B11 4.525
Pittsburg,Calif. C11 5.175
Portsmouth,O. P12 4.525
Roebling,N.J. R5 4.625
So.Chicago,Ill. R2 4.525
SparrowsPoint,Md. B2 4.625
Sterling,Ill. (1) N15 4.525
Struthers,O. Y1 4.525
Torrance,Calif. C11 5.325
Worcester,Mass. A7 4.825

—STRUCTURALS—

Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 4.10
Aliquippa,Pa. J5 4.10
Bessemer,Ala. T2 4.10
Bethlehem,Pa. B2 4.15
Clairton,Pa. U5 4.10
Fairfield,Ala. T2 4.10
Fontana,Calif. K1 4.75
Gary,Ind. U5 4.10
Geneva,Utah C11 4.10
Houston S5 4.60
Ind.Harbor,Ind. I-2 4.10
Johnstown,Pa. B2 4.15
KansasCity,Mo. S5 4.80
Lackawanna,N.Y. B2 4.15
LosAngeles B3 4.80
Minnequa,Colo. C10 4.55
Munhall,Pa. U5 4.10
Niles,Calif.(22) P1 4.91
Phoenixville,Pa. P4 4.95
Seattle B3 4.85
So.Chicago,Ill. U5, W14 4.10
So.SanFrancisco B3 4.75
Torrance,Calif. C11 4.80
Weirton,W.Va. W6 4.55

Wide Flange
Bethlehem,Pa. B2 4.15
Clairton,Pa. U5 4.10
Fontana,Calif. K1 5.30
Lackawanna,N.Y. B2 4.15
Munhall,Pa. U5 4.10
So.Chicago,Ill. U5 4.10

Alloy Stand. Shapes
Clairton,Pa. U5 5.00
Fontana,Calif. K1 6.40
Gary,Ind. U5 5.60
Munhall,Pa. U5 5.60
So.Chicago,Ill. U5 5.60

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 6.175
Bessemer,Ala. T2 6.175
Bethlehem,Pa. B2 6.20
Clairton,Pa. U5 6.175
Fairfield,Ala. T2 6.175
Fontana,Calif. K1 6.822
Gary,Ind. U5 6.175
Geneva,Utah C11 6.175
Ind.Harbor,Ind. I-2 6.175
Ind.Harbor,Ind. Y1 6.675
Johnstown,Pa. B2 6.20
Lackawanna,N.Y. B2 6.20
LosAngeles B3 6.85
Munhall,Pa. U5 6.175
Seattle B3 6.90
So.Chicago,Ill. U5, W14 6.175
So.SanFrancisco B3 6.90
Struthers,O. Y1 6.675

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 6.20
Lackawanna,N.Y. B2 6.20
Munhall,Pa. U5 6.175
So.Chicago,Ill. U5 6.175

BEARING PILES
Munhall,Pa. U5 4.10
So.Chicago,Ill. U5 4.10

—PILING—

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 4.925
Lackawanna,N.Y. B2 4.925
Munhall,Pa. U5 4.925
So.Chicago,Ill. U5 4.925

—PLATES—

PLATES, Carbon Steel
AlabamaCity,Ala. R2 4.10
Aliquippa,Pa. J5 4.10
Ashland,Ky. (15) A10 4.10
Bessemer,Ala. T2 4.10
Clairton,Pa. U5 4.10
Claymont,Del. C22 4.55
Cleveland,O. R2 4.10
Coatesville,Pa. L7 4.35
Conshohocken,Pa. A3 4.55
Ecorse,Mich. G5 4.65
Fairfield,Ala. T2 4.10
Fontana,Calif.(30) K1 4.75
Gary,Ind. U5 4.10
Geneva,Utah C11 4.10
Granite City,Ill. G4 4.40
Harrisburg,Pa. C5 4.95
Houston S5 4.60
Ind.Harbor,Ind. I-2 Y1 4.10
Johnstown,Pa. B2 4.10
Lackawanna,N.Y. B2 4.10
Minnequa,Colo. C10 4.95
Munhall,Pa. U5 4.10
Pittsburgh,Pa. J5 4.10
Riverdale,Ill. A1 4.10
Seattle B3 5.00
Sharon,Pa. S3 4.10
So.Chicago,Ill. U5, W14 4.10
SparrowsPoint,Md. B2 4.10
Steubenville,O. W10 4.10
Warren,O. R2 4.10
Weirton,W.Va. W6 4.40
Youngstown R2, U5, Y1 4.10

PLATES, Carbon Abras. Resist.
Fontana,Calif. K1 5.90
Geneva,Utah C11 5.25

PLATES, Wrought Iron
Economy,Pa. B14 9.30

PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 6.25
Bessemer,Ala. T2 6.25
Clairton,Pa. U5 6.25
Cleveland J5 6.25
Conshohocken,Pa. A3 6.25
Ecorse,Mich. G5 7.10
Fairfield,Ala. T2 6.25
Fontana,Calif.(30) K1 6.90
Gary,Ind. U5 6.25
Geneva,Utah C11 6.25
Ind.Harbor,Ind. I-2 6.25
Ind.Harbor,Ind. Y1 6.75
Johnstown,Pa. B2 6.25
Lackawanna,N.Y. B2 6.25
Munhall,Pa. U5 6.25
Pittsburgh J5 6.25
Seattle B3 7.15
Sharon,Pa. S3 6.25
So.Chicago,Ill. U5, W14 6.25
SparrowsPoint,Md. B2 6.25
Youngstown U5 6.25
Youngstown Y1 6.75

PLATES, Alloy
Claymont,Del. C22 5.65
Coatesville,Pa. L7 5.75
Fontana,Calif. K1 6.60
Gary,Ind. U5 5.55
Johnstown,Pa. B2 5.55
Munhall,Pa. U5 5.55
Sharon,Pa. S3 5.55
So.Chicago,Ill. U5 W14 5.55
SparrowsPoint,Md. B2 5.55

FLOOR PLATES
Cleveland J5 5.15
Conshohocken,Pa. A3 5.15
Ind.Harbor,Ind. I-2 5.15
Munhall,Pa. U5 5.15
So.Chicago,Ill. U5 5.15

PLATES, Ingot Iron
Ashland,c.l. (15) A10 4.35
Ashland,l.c.l.(15) A10 4.85
Cleveland, c.l. R2 4.70
Warren,O. c.l. R2 4.70

—BARS—

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 4.15
Aliquippa,Pa. J5 4.15
Alton,Ill. L1 4.35
Atlanta,Ga. A11 4.40
Bessemer,Ala. T2 4.15
Buffalo R2 4.15
Canton,O. R2 4.15
Clairton,Pa. U5 4.15
Cleveland R2 4.15
Detroit R7 4.30
Ecorse,Mich. G5 4.50
Emeryville,Calif. J7 4.90
Fairfield,Ala. T2 4.15
Fontana,Calif. K1 4.85
Gary,Ind. U5 4.15
Houston S5 4.65
Ind.Harbor,Ind. I-2, Y1 4.15
Johnstown,Pa. B2 4.15
KansasCity, Mo. S5 4.85
Lackawanna,N.Y. B2 4.15
LosAngeles B3 4.85
Milton,Pa. B6 4.15
Minnequa,Colo. C10 4.60
Niles,Calif. P1 4.85
N.Tonawanda,N.Y. B11 4.15
Pittsburg,Calif. C11 4.85
Pittsburgh J5 4.15
Portland,Oreg. O4 4.90
Seattle B3, N14 4.90
So.Chicago R2, U5, W14 4.15
So.Duquesne,Pa. U5 4.15
So.SanFran.Calif. B3 4.90
Sterling,Ill.(1) N15 4.15
Struthers,O. Y1 4.15
Torrance,Calif. C11 4.85
Weirton,W.Va. W6 4.30
Youngstown R2, U5 4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 4.875
Buffalo R2 4.875
Canton,O. T7 5.02
Canton,O. R2 4.875
Clairton,Pa. U5 4.875
Detroit R7 4.975
Ecorse,Mich. G5 5.225
Fontana,Calif. K1 5.925
Gary,Ind. U5 4.875
Houston S5 5.375
Ind.Harbor,Ind. I-2, Y1 4.875
Johnstown,Pa. B2 4.875
KansasCity, Mo. S5 5.575
Lackawanna,N.Y. B2 4.875
LosAngeles B3 5.925
Massillon,O. R2 4.875
Midland,Pa. C18 4.875
So.Chicago R2, U5,W14 4.875
So.Duquesne,Pa. U5 4.875
Struthers,O. Y1 4.875
Warren,O. C17 4.875
Youngstown U5 4.875

BARS & SMALL SHAPES, H.R
High-Strength Low-Alloy
Aliquippa,Pa. J5 6.225
Bessemer,Ala. T2 6.225
Bethlehem,Pa. B2 6.225
Clairton, Pa. U5 6.225
Ecorse,Mich. G5 6.875
Fairfield,Ala. T2 6.225
Fontana,Calif. K1 7.475
Gary,Ind. U5 6.225
Ind.Harb.,Ind. Y1 6.725
Ind.Harb.,Ind. I-2 6.225
Johnstown,Pa. B2 6.225
Lackawanna,N.Y. B2 6.225
LosAngeles B3 6.925
Pittsburgh J5 6.225
Seattle B3 6.975
So.Chicago W14 6.225
So.Duquesne,Pa. U5 6.225
So.SanFrancisco B3 6.975
Struthers,O. Y1 6.725
Youngstown U5 6.225

BAR SIZE ANGLES,H.R.CARBON
Bethlehem,Pa. B2 4.35

BAR SIZE ANGLES, S. Shapes
Aliquippa,Pa. J5 4.15
Atlanta A11 4.40
Niles,Calif. P1 4.85
SanFrancisco S7 5.10

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 5.00
Fontana,Calif. K1 6.00
Gary,Ind. U5 5.00
Houston S5 5.70
KansasCity S5 5.90
Youngstown U5 5.00

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 5.20
BeaverFalls,Pa. M12, R2 5.20
Buffalo B5 5.25
Camden,N.J. P13 5.65
Carnegie,Pa. C12 5.20
Chicago W18 5.20
Cleveland A7, C20 5.20
Detroit P17, R7 5.35
Detroit B5 5.40
Donora,Pa. A7 5.20
Elyria,O. W8 5.20
FranklinPark,Ill. N5 5.20
Gary,Ind. R2 5.20
GreenBay,Wis. F7 5.85
Hammond,Ind. L2, M13 5.20
Hartford,Conn. R2 5.75
Harvey,Ill. B5 5.20
LosAngeles, R2 6.65
Mansfield,Mass. B5 5.75
Massillon,O. R2, R8 5.20
Monaca,Pa. S17 5.20
Newark,N.J. W18 5.65
NewCastle,Pa. (17) B4 5.20
Pittsburgh J5 5.20
Plymouth,Mich. P5 5.45
Putnam,Conn. W18 5.70
Readville,Mass. C14 5.75
St.Louis,Mo. M5 5.50
So.Chicago,Ill. W14 5.20
SpringCity,Pa. K3 5.65
Struthers,O. Y1 5.20
Waukegan,Ill. A7 5.20
Worcester,Mass. W19 6.20
Youngstown F3, Y1 5.20

BARS, Cold-Finished Carbon
(Turned and Ground)
Cumberland,Md. (5) C19 4.45

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 6.325
BeaverFalls,Pa. M12 6.325
Bethlehem,Pa. B2 6.325
Buffalo B5 6.325
Camden,N.J. P13 6.50
Canton,O. R2 6.325
Canton,O. T7 6.20
Carnegie,Pa. C12 6.00
Chicago W18 6.325
Cleveland A7, C20 6.325
Detroit P7 6.425
Detroit P17 6.475
Detroit B5 6.525
Donora,Pa. A7 6.325
Elyria,O. W8 6.325
Gary,Ind. R2 6.325
Hammond,Ind. L2, M13 6.325
Hartford,Conn. R2 6.775
Harvey,Ill. B5 6.325
Lackawanna,N.Y. B2 6.325
Mansfield,Mass. B5 6.775
Massillon,O. R2 R8 6.325
Midland,Pa. C18 6.325
Monaca,Pa. S17 6.325
Newark,N.J. W18 6.65
Plymouth,Mich. P5 6.525
So.Chicago,Ill. R2, W14 6.325
SpringCity,Pa. K3 6.475
Struthers,O. Y1 6.325
Warren,O. C17 6.325
Waukegan,Ill. A7 6.325
Worcester,Mass. A7 6.625
Youngstown F3, Y1 6.325

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 4.15
Atlanta A11 4.40
Buffalo R2 4.15
Cleveland R2 4.15
Emeryville,Calif. J7 4.90
Fairfield,Ala. T2 4.15
Fontana,Calif. K1 4.85
Gary,Ind. U5 4.15
Houston S5 4.65
Ind.Harbor,Ind. I-2, Y1 4.15
Johnstown,Pa. B2 4.15
KansasCity,Mo. S5 4.85
Lackawanna,N.Y. B2 4.15
LosAngeles B3 4.85
Milton,Pa. B6 4.15
Minnequa,Colo. C10 4.75
Niles,Calif. P1 4.85
Pittsburg,Calif. C11 4.85
Pittsburgh J5 4.15
SandSprings,Okla. S5 5.05
Seattle B3, N14 4.90
So.Chicago,Ill. R2 4.15
So.Duquesne,Pa. U5 4.15
So.SanFrancisco B3 4.90
SparrowsPoint,Md. B2 4.15
Sterling,Ill. (1) N15 4.15
Struthers,O. Y1 4.15
Torrance,Calif. C11 4.85
Youngstown R2, U5 4.15

BARS, Reinforcing
(Fabricated; to consumers)
Johnstown, ¼-1" B2 5.55
KansasCity S5 6.35
LosAngeles B3 6.18
Marion,O. P11 5.55
Seattle N14 5.80
Seattle B3 6.25
So.SanFrancisco B3 6.25
SparrowsPt. ¼-1" B2 5.55
Williamsport,Pa. S19 5.45

RAIL STEEL BARS
Avis,Pa.(4) J8 4.75
ChicagoHts.(3) C2 4.50
ChicagoHts.(4) C2 4.75
ChicagoHts.(3,4) I-2 4.50
FortWorth,Tex.(26) T4 4.65
Franklin,Pa.(3) F5 4.50
Franklin,Pa.(4) F5 4.75
Marion,O.(3) P11 4.50
Moline,Ill.(3) R2 4.50
Tonawanda(3,4) B12 5.00
Williamsport,Pa.(3) S19 5.25
Williamsport,Pa.(4) S19 5.45

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 10.40
Economy,Pa.(D.R.)B14 12.90
Economy+Staybolt) B14 13.20
Me.K.Rks.(Staybolt) L5 15.50
Me.K.Rks.(S.R.) L5 10.40
Me.K.Rks.(D.R.) L5 14.90

—SHEETS—

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 3.925
Ilsenport,Pa. P7 3.925
Ashland,Ky.(8) A10 3.925
Butler,Pa. A10 3.925
Cleveland J5, R2 3.925
Conshohocken,Pa. A3 4.05
Detroit M1 4.40
Ecorse,Mich. G5 4.125
Fairfield,Ala. T2 3.925
Fairless,Pa. U5 4.025
Fontana,Calif. K1 4.70
Gary,Ind. U5 3.925
Geneva,Utah C11 4.025
Granite City,Ill. G4 4.25
Ind.Harbor,Ind. I-2, Y1 3.925
Irvin,Pa. U5 3.925
Lackawanna,N.Y. B2 3.925

Munhall,Pa. U5 ..... 3.925
Niles,O. N12 ..... 5.425
Pittsburg,Calif. C11 .. 4.625
Pittsburgh J5 ..... 3.925
Riverdale,Ill. A1 ..... 3.925
Sharon,Pa. S3 ..... 4.225
So.Chicago,Ill. W14 .. 3.925
SparrowsPoint,Md. B2 .. 3.925
Steubenville,O. W10 .. 3.925
Torrance,Calif. C11 .. 4.625
Warren,O. R2 ..... 3.925
Weirton,W.Va. W6 .. 3.925
Youngstown U5, Y1 .. 3.925

SHEETS, H.R. (19 gage)

AlabamaCity,Ala. R2 .. 5.225
Dover,O. R1 ..... *8.80*
Mansfield,O. E6 ..... 5.80
Niles,O. N12 ..... 5.20
Torrance,Calif. C11 .. 5.875

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy

Cleveland J5 .. R2 .... 5.90
Conshohocken,Pa. A3 .. *5.90*
Ecorse,Mich. G5 ..... 6.375
Fairfield,Ala. T2 ..... 5.90
Fontana,Calif. K1 .. 7.00
Gary,Ind. U5 ..... 5.90
Ind Harbor,Ind. I-2 .... 5.90
Ind Harbor,Ind. Y1 .... 6.40
Irvin,Pa. U5 ..... 5.90
Lackawanna(35) B2 .. 5.90
Munhall,Pa. U5 ..... 5.90
Pittsburgh J5 ..... 5.90
Sharon,Pa. S3 ..... 5.90
So. Chicago,Ill. U5 .. 5.90
SparrowsPoint(38) B2 .. 5.90
Warren,O. R2 ..... 5.90
Weirton,W.Va. W6 .... 6.175
Youngstown U5 ..... 5.90
Youngstown Y1 ..... 6.40

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 .. 4.175
Cleveland R2 ..... 4.525
Ind Harbor,Ind. I-2 .. 4.175
Warren,O. R2 ..... 4.525

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 ..... *4.225*
Butler,Pa. A10 ..... 4.775
Cleveland J5, R2 .... 4.775
Ecorse,Mich. G5 .... 4.975
Fairfield,Ala. T2 .... 4.775
Fairless,Pa. U5 ..... 4.875
Follansbee,W.Va. F4 .. 5.775
Fontana,Calif. K1 .. 5.875
Gary,Ind. U5 ..... 4.775
Granite City,Ill. G4 ..... *4.975*
Ind Harbor,Ind. I-2,Y1 4.775
Irvin,Pa. U5 ..... 4.775
Lackawanna,N.Y. B2 .. 4.775
Middletown,O. A10 .... 4.775
Pittsburg,Calif. C11 .. 5.725
Pittsburgh J5 ..... 4.775
SparrowsPoint,Md. B2 4.775
Steubenville,O. W10 .. 4.775
Warren,O. R2 ..... 4.775
Weirton,W.Va. W6 .... 4.775
Youngstown Y1 ..... 4.775

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 .... 7.225
Ecorse,Mich. G5 .... 7.675
Fontana,Calif. K1 .... 8.275
Gary,Ind. U5 ..... 7.225
IndianaHarbor,Ind. Y1 7.725
Irvin,Pa. U5 ..... 7.225
Lackawanna(37) B2 .. 7.225
Pittsburgh J5 ..... 7.225
SparrowsPoint,(38) B2 7.225
Warren,O. R2 ..... 7.225
Weirton,W.Va. W6 .... 7.475
Youngstown Y1 ..... 7.725

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10 ..... 5.275
Cleveland R2 ..... 5.375
Middletown,O. A10 .... 5.275
Warren,O. R2 ..... 5.375

SHEETS, Gal'd No. 10 Steel

AlabamaCity,Ala. R2 .. 5.275
Ashland,Ky.(8) A10 .. 5.275
Canton,O. R2 ..... 5.275
Dover,O. R1 ..... *8.528*
Fairfield,Ala. T2 .... 5.275†
Gary,Ind. U5 ..... 5.275†
GraniteCity,Ill. G4 .... 5.475
Ind Harbor,Ind. I-2 .... 5.325
Irvin,Pa. U5 ..... 5.275†
Kokomo,Ind.(13) C16 .. 5.375
MartinsFerry,O. W10 .. 5.275
Niles,O. N12 ..... 5.80
Pittsburg,Calif. C11 .. 6.025†
Sharon,Pa. S3 ..... 5.45
SparrowsPoint,Md. B2 5.275
Steubenville,O. W10 .. 5.275
Torrance,Calif. C11 .. 6.275†
Weirton,W.Va. W6 .... 5.275

†Based on 5c zinc.

SHEETS, Galvanized No. 10 High-Strength Low-Alloy

Irvin,Pa. U5 ..... 7.925
SparrowsPoint(39) B2 .. 8.075

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10 .. 5.525
Canton,O. R2 ..... 6.025

SHEETS, Culvert

	Cu	Cu
	Alloy	Fe
Ashland,Ky. A10	6.325	..
Canton,O. R2	6.475	6.925
Fairfield T2	6.075	6.325
Gary,Ind. U5	6.075	6.325
Ind Harbor I-2	6.075	6.325
Irvin,Pa. U5	6.075	6.325
Kokomo,Ind. C16	6.525	....
MartinsFry.,O. W10	6.075	..
Pitts.,Cal. C11	6.825	....
SparrowsPt. B2	6.075	....
Torrance,Cal. C11	6.825	....

SHEETS, Culvert Pure Iron

Ashland,Ky. A10 ..... 6.375
Fairfield,Ala. T2 ..... 6.325
MartinsFerry,O. W10 .. 6.325

SHEETS, Galvannealed Steel

Canton,O. R2 ..... 5.825
Irvin,Pa. U5 ..... 5.825†
Kokomo,Ind.(13) C16 .. 5.925
Niles,O. N12 ..... 6.35

†Based on 5c zinc.

SHEETS, ZINCGRIP Steel

Butler,Pa. A10 ..... 5.525
Middletown,O. A10 .... 5.525

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 ..... 5.775
Middletown,O. A10 .... 5.775

SHEETS, Electrogalvanized

Cleveland R2 (28) 6.125
Niles,O. R2 (28) 6.125
Weirton,W.Va. W6 .... 5.975

SHEETS, ALUMINIZED

Butler,Pa. A10 ..... 8.625

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 .. 5.175
Cleveland R2 ..... 5.175
Gary,Ind. U5 ..... 5.175
GraniteCity,Ill. G4 .. 5.875
Ind Harbor,Ind. I-2 .. 5.175
Irvin,Pa. U5 ..... 5.175
Middletown,O. A10 .... 5.175
Youngstown Y1 ..... 5.175

BLUED STOCK, 29 ga.

Yorkville,O. W10 ..... 7.20
Follansbee,W.Va. F4 .. 7.30
Follansbee (23) F4 .. 7.175

SHEETS, Long Terne Steel (Commercial Quality)

Beech Bott'm,W.Va. W10 5.675
Gary,Ind. U5 ..... 5.675
Mansfield,O. E6 ..... 6.25
Middletown,O. A10 .... 5.675
Niles,O. N12 ..... 6.00
Weirton,W.Va. W6 .. 5.675

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .... 6.075

SHEETS, Well Casing

Fontana,Calif. K1 .... 6.20

—STRIP—

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 .. 3.925
Allenport,Pa. P7 ..... *3.925*
Alton,Ill. L1 ..... 4.10
Ashland,Ky.(8) A10 .. 3.925
Atlanta A11 ..... 4.175
Bessemer,Ala. T2 .... 3.925
Bridgeport,Conn.(10) S15 4.15
Buffalo (27) R2 .... 3.925
Butler,Pa.(8) A10 .... 3.925
Carnegie,Pa. S18 .... 4.425
Conshohocken,Pa. A3 .. 4.05
Detroit M1 ..... 4.40
Ecorse,Mich. G5 .... 4.225
Fairfield,Ala. T2 .... 3.925
Fontana,Calif. K1 .... 4.70
Gary,Ind. U5 ..... 3.925
Houston,Tex. S5 .... 4.425
Ind Harbor,Ind. I-2 Y1 3.925
Johnstown,Pa.(25) B2 3.925
KansasCity,Mo.(9) S7 4.625
Lackawna,N.Y.(32) B2 3.925
LosAngeles(25) B3 .... 4.675
Milton,Pa. B6 ..... 3.925
Minnequa,Colo. C10 .... 5.025
NewBritain(10) S15 .... 4.15
N.Tonawanda,N.Y. B11 3.925
Pittsburg,Calif. C11 .. 4.675
Riverdale,Ill. A1 .... 3.925
SanFrancisco 87 ..... 5.10
Seattle(25) B3 ..... 4.925
Seattle N14 ..... 4.925
Sharon,Pa. S3 ..... 3.925
So.Chicago,Ill. W14 .. 3.925
So. SanFrancisco(25) B3 4.675
SparrowsPoint,Md. B2 3.925
Torrance,Calif. C11 .. 4.675
Warren,O. R2 ..... 3.925
Weirton,W.Va. W6 .... 4.025
Youngstown Y1, U5 .. 3.925

STRIP, Hot-Rolled Alloy

Bridgeport,Conn.(10) S15 6.45
Carnegie,Pa. S18 ..... 6.45
Fontana,Calif. K1 .... 7.80
Gary,Ind. U5 ..... 6.40
Houston,Tex. S5 ..... 6.90
KansasCity,Mo. S5 .... 7.10
LosAngeles B3 ..... 7.60
NewBritn.,Conn.(10) S15 6.45
Sharon,Pa. S3 ..... 6.40
So.Chicago W14 ..... 6.40
Youngstown U5 ..... 6.40

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 .... 5.65
Conshohocken,Pa. A3 .. *5.90*
Ecorse,Mich. G5 .... 6.50
Fairfield,Ala. T2 ..... 5.65
Fontana,Calif. K1 .... 7.05
Gary,Ind. U5 ..... 5.95
Ind.Harbor,Ind. I-2 .... 5.95
Ind.Harbor,Ind. Y1 .... 6.45
Lackawanna,N.Y. B2 .. 6.00
LosAngeles(25) B3 .... 6.40
Seattle(25) B3 ..... 6.65
Sharon,Pa. S3 ..... 5.95
So.SanFrancisco(25) B3 6.40
SparrowsPoint,Md. B2 6.00
Warren,O. R2 ..... 5.95
Weirton,W.Va. W6 .... 6.30
Youngstown Y1 ..... 6.45
Youngstown U5 ..... 5.95

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 .. 4.175
Warren,O. R2 ..... 4.525

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 ..... 5.80
Bridgeprt,Conn.(10) S15 6.15
Butler,Pa. A10 ..... 5.45
Cleveland A7, J5 ..... 5.45
Dearborn,Mich. D3 .... 5.75
Detroit D2, P20 ..... 5.70
Detroit M1 ..... 5.65
Dover,O. G6 ..... 5.80
Ecorse,Mich. G5 ..... 5.65
Follansbee,W.Va. F4 .. 5.45
Fontana,Calif. K1 .... 7.35
FranklinPark,Ill.(40) T6 5.70
Ind.Harbor,Ind. I-2 .... 5.70
Lackawanna,N.Y. B2 .. 5.45
LosAngeles C1 ..... 7.50
Mattapan,Mass. T6 .... 6.30
Middletown,O. A10 .... 5.45
NewBedford,Mass. R10, 6.40
NewBritain(10) S15 .... 6.15
NewCastle,Pa. B4 .... 5.45
NewCastle,Pa. E6 .... 5.95
NewHaven,Conn. A7 .. 5.95
NewHaven,Conn. D2 .. 6.20
Pawtucket,R.I. R3 .... 6.80
Pawtucket,R.I.(21) N8 .. 6.65
Riverdale,Ill. (40) A1 .. 5.70
Rome,N.Y.(29) R6 .... 5.45
Sharon,Pa. S3 ..... *5.45*
SparrowsPoint,Md. B2 .. 5.45
Trenton,N.J. R9 ..... 7.00
Wall'ford,Conn. W2(500) 6.40
Warren,O.(40) T6 ..... 5.95
Warren,O. R6 ..... 5.75
Warren,O. R2 ..... 5.45
Weirton,W.Va. W6 .... 5.45
Worcester,Mass. W19 .. 7.05
Youngstown C8 ..... 5.95
Youngstown Y1 ..... 5.45

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15 12.15
Carnegie,Pa. S18 ..... 12.00
Cleveland A7 ..... 12.00
Dover,O. G6 ..... 12.00
Fontana,Calif. K1 .... 13.65
Harrison,N.J. C18 .... 12.00
NewBritn,Conn.(10) S15 12.15
Pawtucket,R.I.(11) N8 12.15
Pawtucket,R.I.(12) N8 12.45
Sharon,Pa. S3 ..... 12.00
Worcester,Mass. A7 .. 12.30
Youngstown C8 ..... 12.00

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5 ..... 7.80
Cleveland A7 ..... 8.15
Dearborn,Mich. D3 .... 7.90
Dover,O. G6 ..... 8.00
Ecorse,Mich. G5 ..... 8.50
Lackawanna,N.Y. B2 .. 8.15
Sharon,Pa. S3 ..... 7.65
SparrowsPoint,Md. B2 .. 8.15
Warren,O. R2 ..... 7.60
Weirton,W.Va. W6 .... 8.30
Youngstown Y1 ..... 8.30

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 ..... 6.05

STRIP, Electrogalvanized

Dover,O. G6 ..... 5.70
Warren,O. T5 ..... 5.70
Weirton,W.Va. W6 .... 5.45
Youngstown C8 ..... 5.95

TIGHT COOPERAGE HOOP

Atlanta A11 ..... 4.65
Riverdale,Ill. A1 ..... 4.50
Sharon,Pa. S3 ..... 4.35
Youngstown U5 ..... 4.35

Key to Producers

A1 Acme Steel Co.
A3 Allan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A7 American Steel & Wire
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bourdi Steel Corp.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co. Div.
B12 Buffalo-Eclipse Corp.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div., Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
C23 Charter Wire Products
C24 G. O. Carlson Inc.
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.
E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.
G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H7 Helical Tube Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
M1 McLouth Steel Corp.
M3 Mahoning Valley Steel
M4 Medart Co.
M5 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Electric Steel
N2 National Supply Co.
N3 National Tube Div.
N4 Nelson Steel & Wire Co.
N6 NewEng. HighCarb. Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Northwest Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O1 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P20 Prod. Steel Strip Corp.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Stainless Welded Products
S26 Specialty Wire Co. Inc.
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace-Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West Auto Mach. Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel
Y1 Youngstown Sheet & Tube

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	8.00	8.60	10.55	12.85
Bridgeport,Conn.(10) B15	6.15	8.00	8.60	10.55	12.85
Bristol,Conn. W1	...	...	8.90	10.85	....
Carnegie,Pa. B18	...	8.00	8.60	10.55	12.85
Cleveland A7	5.45	7.65	8.60	10.55	12.85
Dearborn,Mich. D2	5.75	7.85	8.80		
Detroit D2	6.45	7.85	8.45	10.55	....
Dover,O. G6	6.05	8.00	8.60	10.55	12.85
FranklinPark,Ill. T6	6.80	7.80	8.75	10.70	....
Harrison,N.J. C18	...	...	8.90	10.85	13.15
Mattapan,Mass. T6	6.30	7.95	8.90	10.85	13.15
NewBritn.,Conn.(10) B15	6.15	8.00	8.60	10.55	12.85
NewCastle,Pa. B4	5.45	7.65	8.60	...	....
NewCastle,Pa. E5	6.95	8.00	8.60	10.55	12.85
NewHaven,Conn. D2	6.70	7.95	8.55	10.50	....
NewYork W3	...	8.30	8.90	10.85	13.15
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	....	8.00	8.60	10.55	12.85
Worcester,Mass.,Base	6.65	7.95	8.90	10.85	13.15
Sharon,Pa. S1	5.35	7.65	8.60	10.55	12.85
Trenton,N.J. R5	....	8.30	8.90	10.85	13.15
Wallingford,Conn. W2	6.65	7.95	8.90	10.85	13.15
Warren,O. T5	6.20	8.00	8.60	10.55	12.85
Weirton,W.Va. W6	6.80	8.00	8.60	10.55	12.85
Worcester,Mass. A7	5.75	7.95	8.90	10.85	13.15
Worcester,Mass. T6	6.30	7.95	8.90	10.85	13.15
Youngstown C8	...	8.00	8.60	10.55	12.85
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.50	15.00	....
FranklinPark,Ill. T6	...	...	12.50	15.00	18.00
Trenton,N.J. R5	...	...	12.50	15.00	18.00
Harrison,N.J. C18	...	...	12.50	15.00	18.00
NewYork W3	...	...	12.50	15.00	18.00
Worcester,Mass. T6	...	...	12.50	15.00	18.00
Youngstown C8	...	...	12.50	15.00	18.00

SILICON STEEL

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (cut lengths ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	...	...	8.35	9.60	10.40
Brackenridge,Pa. A4	...	...	8.85	10.10	10.90
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	8.05	8.35	8.85	(34)	...
Manafield,O. E6 (cut lengths)	7.55	7.85	8.35	9.60	10.40
Newport,Ky. N9 (cut lengths)	...	7.85	8.35	9.60	10.40
Niles,O. N12 (cut lengths)	7.55	7.85	8.35	...	...
Vandergrift,Pa. U5	...	8.35	8.85	10.10	10.90
Warren,O. R2	8.05	8.35	8.85	10.10	10.90
Zanesville,O. A10	...	8.35	8.85	10.10	10.90

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)	Transformer Grade 72	65	58	52
BeechBottom W10 (cut lengths)	10.95	11.50	12.20	13.00
Brackenridge,Pa. A4	11.45	....	....	....
Newport,Ky. N9 (cut lengths)	10.95	....	....	....
Vandergrift,Pa. U5	11.45	12.00	12.70	13.50
Warren,O. R2	11.45	....	....	....
Zanesville,O. A10	11.45	12.00	12.70	13.50
H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	**T-100**	**T-90**	**T-80**	**T-73**
Butler,Pa. A10 (C.R.)	....	....	16.05	16.55
Vandergrift, Pa. U5	14.00	14.85	15.85	16.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	7.65	8.05
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American Coke (Base Box) 1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	....
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$8.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2,Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.55

MANUFACTURING TERNES (Special Coated)	
Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, 8 lb (Commercial Quality)	
Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

MANUFACTURING TERNES, LT. Coated, 6 lb	
Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 lb Coated)	
Gary,Ind. U5	9.75

—WIRE—

WIRE, Manufacturers Bright, Low Carbon	
AlabamaCity,Ala. R2	5.525
Aliquippa,Pa. J5	5.525
Alton,Ill. L1	5.70
Atlanta A11	5.775
Bartonville,Ill. K4	5.625
Buffalo W12	5.525
Chicago W13	5.525
Cleveland A7, C20	5.525
Crawfordsville,Ind. M8	5.625
Donora,Pa. A7	5.525
Duluth,Minn. A7	5.525
Fairfield,Ala. T2	5.525
Fostoria,O. (24) S1	5.75
Houston S5	5.925
Johnstown,Pa. B2	5.525
Joliet,Ill. A7	5.525
KansasCity,Mo. S5	6.125
Kokomo,Ind. C16	5.625
LosAngeles B3	6.475
Minnequa,Colo C10	5.775
Monessen,Pa. P7	5.525
No.Tonawanda B11	5.525
Palmer,Mass. W12	5.825
Pittsburg,Calif. C11	6.475
Portsmouth,O. P12	5.525
Rankin,Pa. A7	5.525
So.Chicago,Ill. R2	5.525
So.SanFrancisco C10	6.475
SparrowsPoint,Md. B2	5.625
Sterling,Ill. (1) N15	5.525
Struthers,O. Y1	5.525
Torrance,Calif. C11	6.475
Waukegan,Ill. A7	5.525
Worcester,Mass. A7	5.825

WIRE, MB Spring, High Carbon	
Aliquippa,Pa. J5	6.925
Alton,Ill. L1	7.10
Bartonville,Ill. K4	7.025
Buffalo W12	6.925
Cleveland A7	6.925
Donora,Pa. A7	6.925
Duluth,Minn. A7	6.925
Fostoria,O. S1	6.925
Johnstown,Pa. B2	6.925
Millbury,Mass. (12) N6	8.725
Minnequa,Colo. C10	7.175
Monessen,Pa. P7	6.925
Monessen,Pa. P16	6.95
Muncie,Ind. I-7	7.125
Palmer,Mass. W12	7.225
Pittsburg,Calif. C11	7.575
Portsmouth,O. P12	6.925
Roebling,N.J. R5	7.225
So.Chicago,Ill. R2	6.925
So.SanFran. C10	7.875
SparrowsPt.,Md. B2	7.025
Struthers,O. Y1	6.925
Trenton,N.J. A7	7.225
Waukegan,Ill. A7	6.925
Worcester A7, J4	7.225
Worcester T6, W12	7.225

WIRE, Upholstery Spring	
Aliquippa,Pa. J5	6.625
Alton,Ill. L1	6.80
Buffalo W12	6.625
Cleveland A7	6.625
Donora,Pa. A7	6.625
Duluth,Minn. A7	6.625
Johnstown,Pa. B2	6.625
LosAngeles B3	7.575
Minnequa,Colo. C10	6.875
Monessen,Pa. P7, P16	6.625
NewHaven,Conn. A7	6.925
Palmer,Mass. W12	6.925
Pittsburg,Calif. C11	7.575
Portsmouth,O. P12	6.625
Roebling,N.J. R5	6.925
So.Chicago,Ill. R2	6.625
So.SanFrancisco C10	7.575
SparrowsPoint,Md. B2	6.725
Torrance,Calif. C11	7.575
Trenton,N.J. A7	6.925
Waukegan,Ill. A7	6.625
Worcester,Mass. A7	6.925

WIRE, Fine & Weaving (8"Coils)	
Alton,Ill. L1	10.75
Bartonville,Ill. K4	10.65
Buffalo W12	10.55
Chicago W13	10.55
Cleveland A7	10.55
Crawfordsville,Ind. M8	10.55
Fostoria,O. S1	10.55
Johnstown,Pa. B2	10.55
Kokomo,Ind. C16	10.55
Monessen,Pa. P16	10.55
Muncie,Ind. I-7	10.75
Palmer,Mass. W12	10.85
Roebling,N.J. R5	10.85
So.SanFrancisco C10	10.90
Waukegan,Ill. A7	10.55
Worcester,Mass. A7, T6	10.85

WIRE, Galv'd ACSR for Cores	
Bartonville,Ill. K4	9.50
Johnstown,Pa. B2	9.50
Monessen,Pa. P16	9.50
Muncie,Ind. I-7	9.70
Roebling,N.J. R5	9.80
SparrowsPt.,Md. B2	9.60

ROPE WIRE	(A)
Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo W12	9.35
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.35
Monessen,Pa. P7, P16	9.35
Muncie,Ind. I-7	9.55
Palmer,Mass. W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	9.65
SparrowsPt. B2	9.45
Struthers,O. Y1	9.35
Worcester J4 T6	9.65

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Tire Bead	
Alton,Ill. L1	12.75
Bartonville,Ill. K4	12.65
Monessen,Pa. P16	12.00
Roebling,N.J. R5	12.85

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	7.45
Buffalo W12	7.45
Cleveland A7	7.45
Crawfordsville,Ind. M8	7.55
Dover,O. G6	7.45
Fostoria,O. S1	7.45
Kokomo,Ind. C16	7.55
FranklinPark,Ill. T6	7.60
Massillon,O. R8	7.45
Monessen,Pa. P16	8.00
Monessen,Pa. P7	7.45
Pawtkt.R.I.(12) N8	7.75
Trenton,N.J. R5	7.75
Worcester A7, T6, W12	7.75

WIRE, Merchant Quality (6 to 8 gage)	An'ld.	Galv.
Ala.City R2	6.675	7.05**
Aliquippa J5	6.675	7.20*
Atlanta A11	6.925	7.475
Bartonville(19)K4	6.675	7.225
Buffalo W12	6.675	7.075
Cleveland A7	6.675	....
CrawfordsvilleM8	6.775	7.325
Donora,Pa. A7	6.675	7.075†
Duluth,Minn. A7	6.675	7.075†
Fairfield T2	6.675	7.075†
Houston,Tex. S5	7.075	7.475
Johnstown B2(4S)	6.675	7.225
Joliet,Ill. A7	6.675	7.075†
KansasCity,Mo.S5	7.275	7.675
Kokomo C16	6.775	7.175
LosAngeles B3	7.625	....
Minnequa C10	6.925	7.325**
Monessen P7 (4S)	6.675	7.225
Palmer W12	6.775	7.375
Pitts.,Calif. C11	7.625	8.025†
Portsmouth (18) P12	6.675	....
Rankin A7	6.675	7.075†
So.Chicago R2	6.675	7.075**
So.S.Frn.(4S)C10	7.625	8.025**
Spar'wsPt. B2(4S)	6.775	7.325
Sterl'g(1)(4S)N15	6.675	7.225
Struthers,O. Y1	6.675	7.175
Worcester A7	6.975	....

* Based on 10c zinc; † 5c zinc; ** Subject to zinc equalization extras.

WIRE (16 gage)	An'ld. Stone	Galv. Stone
Ala.City R2	12.50	14.05**
Aliquippa J5	10.63	12.72*
Bartonville(19)K4	10.73	12.51
Cleveland A7	12.56	....
Crawfordsville M8	12.50	14.35
Fostoria,O. S1	12.60	14.15
Johnstown B2	12.50	14.35
Kokomo C16	12.60	14.15
Minnequa C10	12.75	14.45**
Palmer,Mass.W12	12.50	14.05
Pitts.,Calif. C11	12.85	14.40†
So.Chicago R2	12.50	14.05**
SparrowsPt. B2	12.60	14.45
Sterling(1) N15	10.73	12.15
Waukegan A7	12.50	14.05†
Worcester A7	12.80	....

* Based on 11c zinc; † 5c zinc; ** Subject to zinc equalization extras.

WIRE, Barbed	Col.
AlabamaCity R2	153**
Aliquippa J5	150*
Atlanta A11	159
Bartonville,Ill. (19) K4	156
Crawfordsville,Ind. M8	159
Donora,Pa. A7	153†
Duluth,Minn. A7	153†
Fairfield,Ala. T2	153†
Houston,Tex. S5	161
Johnstown,Pa. B2	156
Joliet,Ill. A7	153
KansasCity,Mo. S5	165
Kokomo,Ind. C16	155
Minnequa,Colo. C10	159**
Monessen,Pa. P7	157
Pittsburg,Calif. C11	173†
Rankin,Pa. A7	153†
So.Chicago,Ill. R2	153**
S. SanFrancisco C10	173**
SparrowsPoint,Md. B2	158
Sterling,Ill.(1) N15	156

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga. Col.	
Ala.City Ala. R2	140**
Ala.City 17 ga. R2	235**
Ala.City 18 ga. R2	245**
Aliqp'pa,Pa.9-14½ga. J5	143*
Atlanta A11	146
Bartonville,Ill.(19) K4	143
Crawfordsville,Ind. M8	145
Donora,Pa. A7	140†
Duluth,Minn. A7	140†
Fairfield,Ala. T2	140†
Houston,Tex. S5	148
Johnstown,Pa. B2	143
Johnstown 17 ga. 6" B2	234
Johnstown, 4" B2	237
Joliet,Ill. A7	140†
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142
Minnequa,Colo. C10	148**
Monessen,Pa. 9 ga. P7	145
Pittsburg,Calif. C11	163†
Rankin,Pa. A7	140†
So.Chicago,Ill. R2	140**
Sterling,Ill. (1) N15	143

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	149
Atlanta A11	152
Bartonville,Ill.(19) K4	149
Crawfordsville,Ind. M8	151
Donora,Pa. A7	149
Duluth,Minn. A7	149
Fairfield,Ala. T2	149
Joliet,Ill. A7	149
KansasCity,Mo. S5	161
Kokomo,Ind. C16	151
Minnequa,Colo. C10	154
Pittsburg,Calif. C11	173
So.Chicago,Ill. R2	149
So.SanFran.Calif. C10	173
SparrowsPoint,Md. B2	151
Sterling,Ill.(1) N15	149

NAILS, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	131
Aliquippa,Pa. J5	131
Atlanta A11	134
Bartonville,Ill. (19) K4	131
Chicago,Ill. W13	131
Cleveland A9	137
Crawfordsville,Ind. M8	133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Galveston,Tex. D7	139
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	136
Monessen,Pa. P7	131
Pittsburg,Calif. C11	150
Portsmouth,O. P12	132
Rankin,Pa. A7	131
So.Chicago,Ill. R2	131
SparrowsPt.,Md. B2	133
Sterling,Ill. (1) N15	131
Worcester,Mass. A7	137

NAILS, Cut (100 lb keg) to dealers (33)	
Conshohocken,Pa. A3	$8.00
Wheeling,W.Va. W10	8.00

STAPLES, Polished, Stock To dealers & mfrs. (7)	Col.
Alabama City, Ala. R2	*133*
Aliquippa,Pa. J5	133
Atlanta A11	136
Bartonville,Ill. (19) K4	133
Crawfordsville,Ind. M8	135
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Johnstown,Pa. B2	133
Joliet,Ill. A7	133
Kokomo,Ind. C16	135
Minnequa,Colo. C10	138
Monessen,Pa. P7	133
Pittsburg,Calif. C11	152
Portsmouth,O. P12	132
Rankin,Pa. A7	133
So.Chicago,Ill. R2	*133*
SparrowsPt.,Md. B2	135
Sterling,Ill. (1) N15	133
Worcester,Mass. A7	139

—FENCE POSTS—

	Col.
ChicagoHts.,Ill. C2, I-2	145
Duluth,Minn. A7 (49)	136
Franklin,Pa. F5	145
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	150
Moline,Ill. R2	145
So.Chicago,Ill. R2	145
Tonawanda,N.Y. B12	148
Williamsport,Pa. S19	158

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25
Ambridge, Pa. N2 (†)	15.75	...	19.75	...	22.25	...	23.75	...	23.75	...	23	...	25.5	...
Lorain, O. N3 (*)	15.75	4.5	19.75	5.5	22.25	8	23.75	9.5	23.75	9.5	23	8.75	25.5	11.25
Youngstown Y1 (††)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2 (**)	15.75	0.75	19.75	3	22.25	5.5	23.75	7	23.75	7	23	6.25	25.5	8.75

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	¼		⅜		½		¾		1		1¼		1½	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	...	...	...	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5
Alton, Ill. L1 (§)	...	...	...	...	....	....	24.25	9	27.25	13	29.75	16.5	32.25	17.5
Benwood, W. Va. W10(††)	25.5	+0.75	17.75	+6	10.25	+10.75	26.25	10	29.25	14	31.75	17.5	34.25	18.5
Butler, Pa. F6 (†)	26.5	+2.75	19.5	+7.25	12.5	+13	....	..	....	..	....	..	....	..
Etna, Pa. N2 (†)	...	...	...	...	....	....	26.25	7	29.25	11	31.75	14.5	34.25	16.25
Fontana, Calif. (§)	...	...	...	...	....	....	13.25	+3	16.25	1	18.75	4.5	21.25	5.5
Ind. Harbor Y1 (††)	...	...	...	...	....	....	25.25	9	28.25	13	30.75	16.5	33.25	17.5
Lorain, O. N3 (*)	...	...	...	...	....	....	26.25	16	29.25	20	31.75	23.5	34.25	23
Sharon, Pa. S4 (†)	26.5	−0.25	19.5	+5.25	12.5	+8.5	....	..	....	..	....	..	....	..
Sharon, Pa. M6	...	...	...	...	....	....	26.25	11	29.25	15	31.75	18.5	34.25	19.25
Sparrows Pt., Md. B2 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	24.25	8	27.25	12	29.75	15.5	32.25	16.5
Youngstown R2 (**)	...	...	...	...	....	....	26.25	11	29.25	15	31.75	18.5	34.25	19.25
Youngstown Y1 (††)	...	...	...	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5
Wheatland, Pa. W9 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	26.25	10	29.25	14	31.75	17.5	34.25	18.5

Size—Inches	2		2½		3		3½		4		1½		1½	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		23c		27.5c	
Pounds Per Ft.	3.68		5.82		7.62		9.20		10.89		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....	....	....	....	....
Alton, Ill. L1 (§)	33.25	18.75	34.75	18	34.75	18	....	....	....	....	....	....	....	....
Benwood, W. Va. W10(††)	35.25	20	36.75	20	36.75	20	27.75	10.5	27.75	10.5	....	....	....	....
Etna, Pa. N2 (†)	35.25	17.25	36.75	18.5	36.75	18.5	27.75	9	27.75	9	....	....	....	....
Fontana, Calif. K1 (§)	22.25	7	23.75	7	23.75	7	....	....	....	....	....	....	....	....
Ind. Harbor, Ind. Y1 (††)	34.25	19	35.75	19	35.75	19	....	....	....	....	....	....	....	....
Lorain, O. N3 (*)	35.25	24.5	36.75	23	36.75	23	....	....	....	....	....	....	....	....
Sharon, Pa. M6	35.25	20.75	36.75	20.5	36.75	20.5	....	....	....	....	....	....	....	....
Sparrows Pt., Md. B2 (§)	32.25	18	34.75	18	34.75	18	25.75	8.5	25.75	8.5	....	....	....	....
Youngstown R2 (**)	35.25	20.75	36.75	20.5	36.75	20.5	27.75	11	27.75	11	....	....	....	....
Youngstown Y1 (††)	35.25	20	36.75	20	36.75	20	....	....	....	....	....	....	....	....
Wheatland, Pa. W9 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; (§), 10c to under 11c; (††), 10.50c-11.50c; with discounts adjusted on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	21.31	18.44
1¼	13	....	25.24	18.12
1½	13	23.12	27.89	20.01
1¾	13	26.84	32.37	23.66
2	13	30.08	36.28	26.51
2¼	13	34.18	41.23	29.86
2½	12	37.10	44.75	32.41
2½	12	40.51	48.86	35.70
2¾	12	43.85	52.90	38.66
3	12	45.92	55.39	41.23

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	4.325	4.225	4.275	5.20
Ensley,Ala. T2	4.325	4.225	....	5.20
Fairfield,Ala. T2	....	....	....	5.20
Gary,Ind. U5	4.325	4.225	4.275	...
Huntington,W.Va. W7	....	....	....	5.20
IndianaHarbor,Ind. I-2	4.325	4.225	4.275	...
Johnstown,Pa. B2	....	....	....	(16)5.20
Lackawanna,N.Y. B2	4.325	4.225	....	5.20
Minnequa,Colo. C10	4.325	4.125	....	5.70
Steelton,Pa. B2	4.325	4.225	....	...
Williamsport,Pa. S19	....	....	....	5.20

TIE PLATES

Fairfield,Ala. T2 ..... 5.125
Gary,Ind. U5 ..... 5.125
Ind Harbor,Ind. I-2 ..... 5.125
Lackawanna,N.Y. B2 ..... 5.125
Minnequa,Colo. C10 ..... 5.125
Pittsburg,Calif. C11 ..... 5.275
Seattle B3 ..... 5.275
Steelton,Pa. B2 ..... 5.125
Torrance,Calif. C11 ..... 5.275

TRACK BOLTS (20) Treated

KansasCity,Mo. S5 ..... 11.00
Lebanon,Pa. B2 ..... 11.00
Minnequa,Colo. C10 ..... 11.00
Pittsburgh O3, P14 ..... 11.00

JOINT BARS

Bessemer,Pa. U5 ..... 5.275
Fairfield,Ala. T2 ..... 5.275
Ind Harbor,Ind. I-2 ..... 5.275
Joliet,Ill. U5 ..... 5.275
Lackawanna,N.Y. B2 ..... 5.275
Minnequa,Colo. C10 ..... 5.275
Steelton,Pa. B2 ..... 5.275

AXLES

Ind Harbor,Ind. S13 ..... 6.50
Johnstown,Pa. B2 ..... 6.50

STANDARD TRACK SPIKES

Ind Harbor,Ind. I-2, Y1 ..... 7.05
KansasCity,Mo. S5 ..... 7.30
Lebanon,Pa. B2 ..... 7.05
Minnequa,Colo. C10 ..... 7.05
Pittsburgh J5 ..... 7.05
Seattle B3 ..... 7.55
So.Chicago,Ill. R2 ..... 7.05
Struthers,O. Y1 ..... 7.05
Youngstown R2 ..... 7.05

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh; f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in.,larger 8.90c
⅞-in. under ..... 26.5 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:
½-in. & smaller diam. 4
⅝-in. & ⅝-in. 5
¾-in. and larger ... 3
Longer than 6 in.:
All diams. ..... +4
Lag bolts, all diams.:
6 in. and shorter.... 12
Over 6 in. long 8
Ribbed Necked Carriage 5
Blank 25
Plow 25
Step, Elevator, Tap and Sleigh Shoe 12
Tire Bolts ..... List
Boiler & Fitting-Up Bolts 23

NUTS

H.P. & C.P., regular & heavy:
Square, all sizes 58
H.P., Hex, regular & heavy:
¾" and smaller 58
⅞" to 1⅛", inclusive. 60
1¼" to 1½", inclusive 62
1⅝" and larger 58
C.P. Hex, regular heavy:
All sizes 58
Hot Galv. Nuts (all types):
¾" and smaller 40
⅞" to 1½", inclusive. 43

Finished Hex Nuts:
New standard, all sizes 58
Semifinished & Slotted Hex.:
Regular and heavy, all sizes 58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter 34
1 in. and smaller diam. x over 6 in. 20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller.... 34
¼-in. diam. & larger.. 14
N.F. thread, all diams.. 8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish ..... 47.5 & 10
Plated finishes .... 30 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged, per cent off list)

6 in. or shorter:
⅝-in. & smaller 38
¾-in. through 1 in. .. 22
Longer than 6 in.:
⅝-in. and smaller ... 20
¾-in. through 1 in... 7

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron: 98+% Fe, annealed	18.00
Unannealed	14.50
Swedish, c.i.f. N. Y., c.l., in bags	11.25
Electrolytic iron: Annealed, 99.5% Fe.	42.50
Unannealed (99+% Fe)	36.50
Unannealed (99+% Fe) (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns.	83.00-148.00
Aluminum: Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	34.00
Antimony, 500 lb lots.	78.00
Brass, 20-ton lots	29.50-36.50
Bronze, 10-ton lots	51.00-60.00
Copper: Electrolytic	43.25
Reduced	43.25
Lead	21.75
Magnesium	75.00-85.00
Manganese: Minus 35 mesh	52.00
Minus 100 mesh	57.00
Minus 200 mesh	62.00
Nickel unannealed	89.50
Nickel Silver 5-ton lots	47.00
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	91.00
Tin	14.00*
Zinc, 10-ton lots.	17.50-25.00

Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh: 1000 lb and over	5.35
Less than 1000 lb	5.50
Chromium, electrolytic 99.9% Cr min.	3.50

*Plus cost of metal.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅝" to 1 7/16"; 1 7/16" to 1 15/16" 4.58c; 1 15/16" to 7 5/16" 4.95c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga., 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.40c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; add 0.35c for universal mill.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(48) 6.7 gage.
(49) T-post; add 2 cols. for T-post.
(50) 0.025 gage; 6.55c for 0.028 to 0.005 gage; 6.65c for 0.062 gage and over.

STAINLESS STEEL MILL PRICES

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. Bars; H.R. Strip	Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	46.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
304L	....	....	36.75	....	....	42.75	45.25	54.25	49.00
306	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	63.50	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	48.75	54.50	55.00	55.50	59.00	64.50	66.50
316L	....	....	52.50	....	....	61.00	64.25	70.00	72.00
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	65.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
330	....	....	58.00	....	....	68.50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	62.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.75	38.25	53.00	39.50	40.75	59.75	71.00
501	....	....	14.00	14.50	21.25	16.00	18.25	30.50	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Division, U. S. Steel Corp.; Armco Steel Corp.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur D. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Co.; Fifth Sterling Inc.; Ft. Wayne Metals Inc.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Division, Borg Warner Corp.; Jessop Steel Co.; Josiyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; Page Steel & Wire Division, American Chain & Cable Co. Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Stainless Welded Products Inc.; Superior Steel Corp.; Timken Roller Bearing Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets: Carbon Base 20%	Sheets: Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60	32.50-32.70	32.50	77.00
310	36.50	41.00	....	144.00
316	32.60	37.70-42.75	42.75	....
318	37.00	42.20	....	....
321	29.30	34.40-37.00	37.00	111.00
347	30.40	35.50-40.50	40.50	130.00
405	23.40	30.60	....	....
410	22.90	30.10	....	....
430	22.90	30.10	....	....
Inconel	41.23	54.18	....	165.00
Nickel	37.50	50.90	....	....
Monel	38.90	51.80	....	....
Copper*	....	....	46.00	....

	Strip, Carbon Base: Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Copper*	27.85	35.85	24.00	32.25

*Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont Del. C22 Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates Coatesville L7; copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.25-.285	5% Cr Hot Work	0.39
Extra Carbon	0.33-.340	W-Cr Hot Work	0.41
Special Carbon	0.35-.360	V-Cr Hot Work	0.43
Oil Hardening	0.370-.39	Hi-Carbon-Cr.	0.665-.70

Grade by Analysis (%) W	Cr	V	Co	Mo	$ per lb
20	4	1.6	12	2.5	4.055
18	4	1	4.75	....	2.340
18	4	2	9	....	2.565-2.695
18	4	2	....	....	1.820
18	4	1	....	....	1.580-1.660
13.5	4	3	....	....	1.875
6.4	4.5	1.9	....	5	1.065
6	4	3	....	6	1.300
2	1.4	1.2	....	....	0.495
1.5	4	1	....	8.5	0.895

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

PIG IRON, Gross Ton

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Alabama City, Ala. R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	....	....
Woodward, Ala. W15	52.38	52.88	....	....
Cincinnati, del.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda, N.Y. W12	56.00	56.50	57.00	....
No. Tonawanda, N.Y. T9	....	56.50	57.00	....
Boston, del.	66.65	67.15	67.65	....
Rochester, N.Y., del.	59.02	59.52	60.02	....
Syracuse, N.Y., del.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary, Ind. U5	56.00	....	56.50	....
Indiana Harbor, Ind. I-2	56.00	....	56.50	....
So. Chicago, Ill. W14, Y1	56.00	56.50	56.50	....
So. Chicago, Ill. U5	56.00	....	56.50	57.00
Milwaukee, del.	58.17	58.67	58.67	59.17
Muskegon, Mich., del.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron, O., del. from Cleve.	58.75	59.25	59.25	59.75
Lorain, O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem, Pa. B2	$58.00	$58.50	$59.00	$59.50
New York, del.	....	62.28	62.78	....
Newark, del.	61.02	61.52	62.02	62.52
Philadelphia, del.	60.75	61.25	61.75	62.25
Birdsboro, Pa. B10	58.00	58.50	....	....
Steelton, Pa. B2	58.00	58.50	59.00	59.50
Swedeland, Pa. A3	58.00	58.50	59.00	59.50
Troy, N.Y. R2	58.00	58.50	59.00	....
Pittsburgh District				
Neville Island, Pa. P6	56.00	56.50	56.50	....
Pitts., N.&S. sides, Ambridge, Aliquippa, del.	57.37	57.87	57.87	....
McKees Rocks, del.	57.04	57.54	57.54	....
Lawrenceville, Homestead, Wilmerding, Monaca, del.	57.66	58.16	58.16	....
Verona, Trafford, del.	58.19	58.69	58.69	....
Brackenridge, del.	58.45	58.95	58.95	....
Bessemer, Pa. U5	56.00	....	56.50	57.00
Clairton, Rankin, So. Duquesne, Pa. U5	56.00	....	....	....
McKeesport, Pa. N3	56.00	....	....	57.00
Midland, Pa. C18	56.00	....	....	....
Monessen, Pa. P7	56.00	....	....	....
Youngstown District				
Hubbard, O. Y1	....	....	56.50	....
Sharpsville, Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield, O., del.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie, Pa. I-3	56.00	56.50	56.50	57.00
Everett, Mass. E1	....	63.00	63.50	....
Fontana, Calif. K1	62.00	62.50	....	....
Geneva, Utah C11	57.50	58.00	....	....
Granite City, Ill. G4	57.90	58.40	58.90	....
Ironton, Utah C11	56.00	56.50	....	....
Lone Star, Texas L6	52.00	52.50*	52.50	....
Minnequa, Colo. C10	58.00	59.00	59.00	....
Rockwood, Tenn. T3	....	....	56.50	....
Toledo, O. I-3	56.00	56.50	56.50	57.00
Cincinnati, del.	61.76	62.26	....	....

*Low phos. southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson, O. G2, J1	$67.00
Buffalo H1	68.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)	
Niagara Falls, N.Y. P15	$91.00
Keokuk, Iowa, Openhearth & Fdry, freight allowed K2	95.50
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frt. allowed K2	98.50
Wenatchee, Wash., OH & Fdry, freight allowed K2	95.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$61.00
Rockwood, Tenn. T3	70.00
Steelton, Pa. B2	64.00
Philadelphia, delivered	67.55
Troy, N.Y. R2	64.00

"8% fewer rejects"
"better finishes"
"production per shift up 10%"

Reports like these are not unusual from plants using Carpenter Free-Machining Stainless. The reason is the *consistent uniformity* of Carpenter Stainless, plus the shop help that Carpenter can provide.

For example, there is a "gold mine" of useful fabricating information right near you. Your Carpenter representative has had a lot of Stainless machining experience that could be used on your jobs, to get more finished parts from the Stainless bar stock you buy. Call him today. The number of Carpenter's nearest mill-branch warehouse is in your classified telephone directory.

And Carpenter can provide printed "Know-How" that will be a big help on your Stainless machining jobs. Useful facts on turning, drilling, milling, lubrication, etc. have been published in the Carpenter "NOTEBOOK on Machining Stainless Steels". For your copy, drop us a note on your company letterhead, indicating your title.

The Carpenter Steel Company, 139 W. Bern St., Reading, Pa.
Export Department: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

Carpenter

Free-Machining Stainless

takes the problems out of production

Call your nearest Carpenter Mill-Branch Warehouse, Office or Distributor

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, St. Paul, 15 cents; Seattle and Spokane, Wash., no charge.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††°		Carbon	Floor
Baltimore	6.20	7.64	7.81	7.66	...	6.86	8.17°	12.04	6.98	6.85	7.98
Birmingham	6.10	7.60	8.60²	6.30	...	6.15	8.90	....	6.35	6.35	8.65
Boston	6.89	7.83	9.18	7.13	...	6.87	8.35	12.28	7.06	7.13	8.26
Buffalo	6.18	7.15	8.96	6.79	...	6.35	7.70	12.17	6.59	6.68	7.88
Charlotte, N. C.	6.95	7.80	8.69	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.18	7.12	8.00	6.42	...	6.28	7.30	11.75	6.46	6.33	7.46
Cincinnati	6.51	7.19	8.42	6.72	...	6.58	7.66	12.17	6.93	6.80	7.88
Cleveland	6.18	7.12	7.90	6.58	...	6.34	7.65	11.89	6.79	6.50	7.79
Detroit	6.38	7.31	8.29	6.71	7.36	6.56	7.60	11.92	6.93	6.85	7.80
Erie, Pa.	6.19	7.13	9.01	6.54	...	6.28	7.70	....	6.56	6.50	7.79
Houston	7.15	7.85	9.32	7.45	...	7.45	...	....	7.35	7.20	8.55
Jersey City, N.J.	6.54	7.45	8.72	6.82	...	6.75	8.43°	11.84	6.50	6.67	8.01
Los Angeles	7.25	9.00	9.35	7.55	11.20	7.15	9.10	13.05	7.35	7.20	9.25
Milwaukee	6.35	7.29	8.22	6.59	...	6.45	7.57	11.92	6.63	6.50	7.63
Moline, Ill.	6.58	7.47	8.40	6.77	...	6.63	7.65	....	6.81	6.68	...
New York	6.54	7.45	8.42	6.82	...	6.75	8.43°	11.84	6.50	6.67	8.01
Newark, N. J.	6.78	7.75	9.02	7.16	...	7.06	8.43°	....	6.90	6.99	8.30
Norfolk, Va.	6.90	...	...	7.20	...	7.20	8.50	....	7.20	7.15	7.85
Philadelphia	6.53	7.55	8.41	7.02	8.80	6.87	8.19°	11.89	6.67	6.63	7.65
Pittsburgh	6.18	7.12	8.30	6.55	...	6.28	7.65	11.89	6.46	6.33	7.46
Portland, Oreg.	7.90	9.30	10.00	7.90	...	7.60	10.65	....	7.50	7.55	9.40
Richmond, Va.	6.50	7.45	8.00	7.10	...	7.05	7.95	....	7.10	6.85	8.10
St. Louis	6.48	7.42	8.30	6.72	...	6.58	7.70	12.05	6.86	6.73	7.88
St. Paul	6.84	7.78	8.71	7.08	...	6.94	8.06	....	7.12	6.99	8.12
San Francisco	7.35	8.70	10.15	7.60	...	7.15	9.75	13.05	7.25	7.20	9.25
Seattle	8.15	8.70	10.05	8.02		7.58	10.13	13.50	7.50	7.59	9.40
Spokane	8.15	9.40	9.80	8.50		7.60	10.55	14.15	7.25	7.35	9.80
Washington	6.71	8.15	8.35	7.51	...	7.37	8.43	....	7.49	7.36	8.49

*Prices do not include gage extras; † prices include gage and coating extras except Birmingham (coating extra excluded) and Los Angeles (gages extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed; ** ⅛" and heavier, 8.09c for No. 12 and lighter. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; Cold-finished bars, 2000 lb and over; ²—500 to 9999 lb; ³—1000 to 1999 lb; ° 1000 lb and over; ⁷—1500 lb to 3499; ⁸—under ½ in.

Steel Moves Well at Warehouse Level

Distributors are in position to meet most demands and are booking more business than in September. Competition is keener. Prospects for fourth quarter are good

Philadelphia Warehouse demand is more active with the likelihood that October bookings will surpass those of September. Improvement in distributors' stocks has helped. Except for wide flange shapes the warehouses can now meet most demands on them without difficulty. Despite improved business, competition is keener and some price shading is reported.

Chicago Although warehouse steel sales since Labor Day haven't been up to expectations they are in good volume. Better tonnage receipts from the mills make it easier to fill customer requirements. Hot-rolled sheets are in adequate supply and cold-rolled sheets are nearing that point.

Users of nickel-bearing stainless are inquiring about what they can expect in quantities after Nov. 1, the decontrol date, but there is nothing as yet resembling a deluge in this direction.

Cincinnati Business volume is holding up satisfactorily with inventories improving all the time. Distributors are looking forward to expiration of the nickel control order on Nov. 1. This is the last control as far as the warehouses are concerned. Fourth quarter prospects are good.

Cleveland Individual orders being booked by local warehouses are smaller with customers apparently buying only for immediate requirements and watching inventories closely. Over-all demand, however, is substantial and volume during the current month is expected to bulk among the better months of the entire year.

More selling effort is required to move tonnage with competition noticeably sharper. Distributors' stocks are in the best shape in a long time though complete balance has not been achieved as regards sizes and items. Receipts from the mills are satisfactory, and there is an increasing tendency on the part of some warehouses to shy away from mill offerings of the slower moving products.

Pittsburgh Warehouses are build-

STEEL IMPORT PRICES

(Base, Per 100 Lb, Landed, Duty Paid)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A-305	$4.86	$4.94	$4.86	$5.14
Bar Size Angles	4.53	4.61	4.53	4.81
Structural Angles	4.53	4.61	4.53	4.81
I-Beams	4.80	4.88	4.80	5.08
Wide Flange Beams	4.94	5.02	4.94	5.22
Sheet and Plate, 10 gage, 11 gage, 5' x 10'	5.87	5.95	5.87	6.25
Furring Channels, C.R., 1000 ft., ¾ x 0.30 lb per ft.	21.30	21.54	21.30	22.14
Barbed Wire	6.10	6.12	6.10	6.33
Merchant Bars	4.81	4.89	4.81	5.09
Hot Rolled Bands	4.97	5.05	4.97	5.25
Wire Rods, Thomas Commercial No. 5	4.68	4.75	4.73	5.00
Wire Rods, O-H, Cold Heading Quality No. 5	5.14	5.21	5.19	5.46
Channels	4.80	4.88	4.80	5.08
Bright Common Wire Nails, 8d	6.49	6.59	6.45	6.70

Seamless A.P.I. Casing, Grade J-55

Size O.D.	Wgt. Foot/Lb	Gulf Port	West Coast	Vancouver
5½ in.	15.5	$1.47/ft	$1.51/ft	$1.32/ft
7 in.	23	2.10/ft	2.17/ft	1.90/ft
Seamless N-80 Casing:				
5½ in.	17	1.94/ft	2.00/ft	1.75/ft
7 in.	23	2.50/ft	2.70/ft	2.36/ft
Seamless J-55 Tubing—				
2⅜ in.	4.7	0.60/ft	0.63/ft	0.55/ft
2⅞ in.	6.5	0.80/ft	0.83/ft.	0.73/ft

Sources of Shipment: Western continental European (Schuman Plan) countries.

ing stocks, now holding 80 to 85 per cent of "normal inventories." Holes still remain in stocks, with light plates and structural shapes hard to obtain. Cold-finished bars and most hot-rolled bars are in good supply, along with alloy bars, stainless steel sheets and tubular products.

Jones & Laughlin Steel Corp. is expanding its distribution system along the Ohio and Mississippi rivers with the opening of a new warehouse at Louisville, Ky., planned for next month. The warehouse will carry a complete stock of hot-rolled and cold-finished bars, sheets, strip, structurals and plate.

Boston — Most finished steel products are starting to ease, including larger rounds and heavier, wider plates. Warehouse stocks are in balance with the exception of a few products, one being wide-flanged beams.

Demand from warehouse has reverted to normal pattern with the average order smaller. Some distributors took forward orders for higher nickel stainless, anticipating decontrol of nickel, but may not be able to meet commitments. First increase in nickel stainless volume is expected to move directly to consumers before large tonnages go through warehouse channels.

San Francisco — Distributors are keeping close tabs on their inventories. They want to keep their houses in order, too, and are avoiding too big a build up in items which now are beginning to move slowly. Their sales have been good, but soft spots are developing. Rush jobs are disappearing and warehouses are adjusting their ordering accordingly.

Los Angeles — Warehouse order volume in September was slightly greater than during August. Post-Korean truce aircraft schedule stretch-outs have reduced steel requirements of both prime and subcontract airplane and partsmakers. Distributors' stocks of all steel products are improved with the exception of wide-flange beams.

Seattle — Prewar market conditions are returning. Mill deliveries are reasonably prompt. Plate and flat-rolled supplies are tight, including hot and cold-rolled sheets. Galvanized sheets are easy.

Demand for warehouse items has dropped. Scarcity of domestic plates is stimulating imports, principally from Japan. European steel is not competing noticeably in this area, all foreign steel being barred from competing in public works projects. Some minor price adjustments may be effected soon.

Larger Sheetmakers Still Heavily Booked

Some premium-price sellers have difficulty in filling schedules but order volume in general continues large assuring high-level operations into first quarter

Sheet and Strip Prices, Page 138 & 139

Boston — Except for some specialties, including stainless, not much freight absorption is in prospect on flat-rolled finished steel products during fourth quarter. More sheet and strip tonnage in the carbon grades is being offered and first quarter distribution may involve more freight concessions.

Larger nickel stainless tonnage before December is doubtful. Numerous users and distributors, however, have allowed their stocks of straight chromium stainless to shrink in anticipation of nickel decontrol and increased availability of nickel-stainless grades. As a result, shortages of stainless are likely to be experienced before the 300 series gets into high production. In any event, most producers have limited supplies of nickel.

If, and when, freight absorption starts, tonnage produced nearer points of consumption will be first involved, gradually spreading to more distant consuming areas until an economical limit is reached. This is generally conjectured to be $4 to $5 per ton.

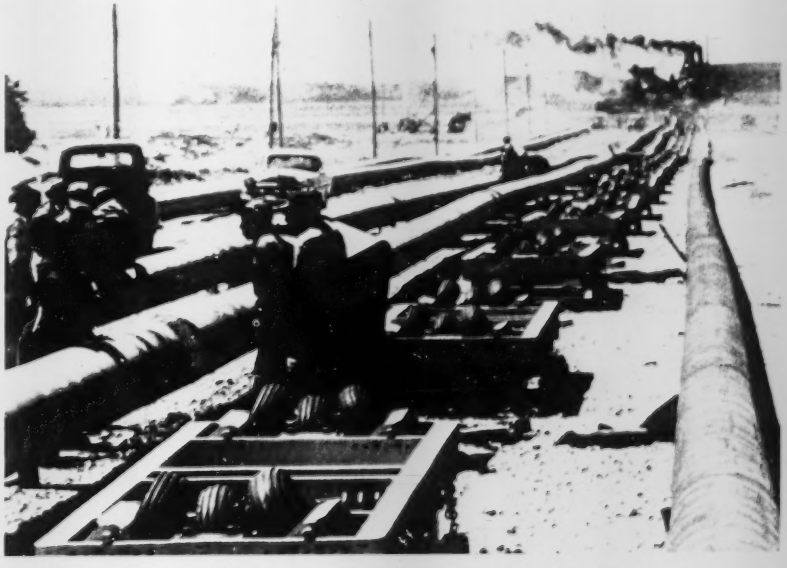
Converters of narrow cold-rolled strip are not taking in all the hot-strip offered them.

Pittsburgh — Sheet demand is strong and is expected to remain so throughout the year. Automakers' orders for cold-rolled sheet are smaller than they were during the summer. Demand from other consumers remains heavy, and producers report well-filled fourth quarter order books.

Pittsburgh Steel Co. began shipping steel to southwestern markets by barge from its new Allenport, Pa., mill last week. First load of 630 tons was sent to Houston, Tex.

Sheet and strip prices at Allenport were announced by Pittsburgh Steel. These are listed in STEEL's price section, and are on a level with those quoted by other leading producers.

New York — The decline in sheet business continues, but at least one leading producer thinks the trend is leveling off. Demand for cold-rolled sheets holds up better than that for hot-rolled. Galvanized sheet sup-

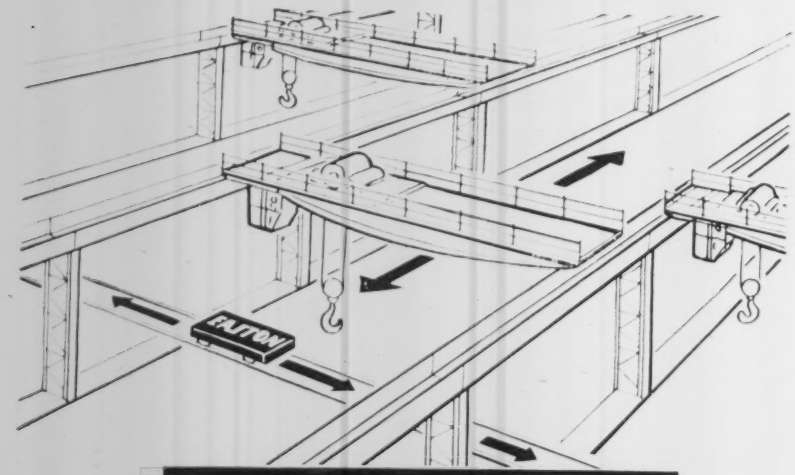


Dollies Solve Difficult Pipeline Laying Project

Two four-mile sections of 20-in. pipe were laid along the bottom of Mackinac Straits in Northern Michigan, saving more than 100 miles of land clearing and ditching by crossing the 240-ft deep shipping channel. Using rubber-tired dollies, Firestone Tire & Rubber Co.'s patented pipe-launching devices, the pipe was laid at the rate of almost 1000 ft per hour. The pipeline will carry oil from Canadian fields to refineries at Sarnia, Ont., thereby maintaining a constant supply through the winter when tankers are immobilized by ice

Cross-Bay Transfer

Automatic motor-driven transfer cars provide a universal handling system in modern parallel bay plants now served by overhead cranes. Also for transfer between plant buildings.



EASTON

A 1041

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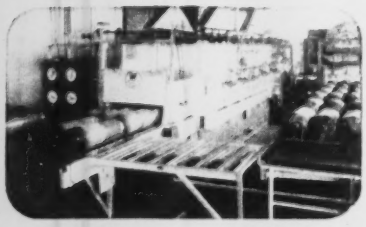
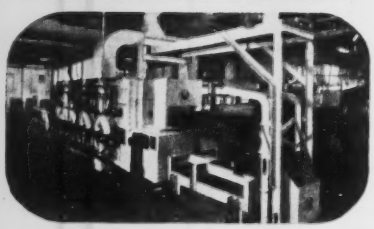
Compressed gas cylinders or tanks are continuously normalized and annealed—scale-free in EF gas fired furnaces.

Bolts, springs and other products are scale free heat treated in EF continuous chain belt conveyor furnaces. 11 sizes—to handle from 125 to 2000 lbs. or more per hour.





EF PRODUCTION FURNACES

for these and other processes

Reflecting more than 30 years of continuous research, experience and outstanding engineering accomplishments, EF production furnaces combine high heating efficiency—accurate, automatically controlled cycles—high fuel economy—and produce products with uniform physicals and surface finish year after year.

For advanced engineering designs that minimize maintenance and produce high hourly outputs, turn your production furnace problems over to one of the experienced EF furnace engineers—it pays.

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ply is adequate and enameling stock is in noticeably easier position. No appreciable letup appears in demand for electrical sheets, however.

While most producers of stainless steel doubt they will be able to obtain much more nickel than their present quotas call for before end of the year, at least one large interest believes it will definitely have more nickel to spare for commercial needs once the ban on these requirements generally is lifted Nov. 1. Military needs have declined and for some time past this company has been scouring the market for buyers with certificates entitling them to purchase nickel-chrome steel.

Philadelpia—Some fabricators of hot and cold-rolled sheets have cut inventories too low and are now specifying more freely than in the past couple months. However, the over-all trend in buying is downward.

Alan Wood Steel Co. has placed its new continuous strip pickler in operation at Ivy Rock, Pa. The unit can process an estimated 20,000 pounds of strip per month.

Cleveland—Sheetmakers' order books are well filled for fourth quarter despite recent cutbacks and cancellations. No difficulty has been encountered in filling open spaces in schedules that have appeared. At the same time the opening of books for first quarter has been followed by an encouraging volume of placements.

Cincinnati—The severely retarded operations of one large mill in this area dominate the sheet market picture here. Beginning Oct. 19, this mill, already on reduced steel ingot production, is shutting down one rolling mill and furloughing 200 to 250 workers. The management announced that reduced commitments for sheets was the reason.

Chicago—First quarter prospects for sheets look good to producers here. Oddly enough, a considerable number of users are indicating their requirements are going to be up.

Los Angeles—Kaiser Steel Corp.'s Fontana Works' fourth quarter books are still open on narrow sheets and skelp.

San Francisco—A distributor here reports he placed orders three weeks ago with the new Fairless Works for hot-rolled sheets and has been promised delivery in October-November.

Tin Plate . . .

Tin Plate Prices, Page 140

New York—Tin plate demand has dropped off more than seasonally. One leading producer's operations have dropped to less than 75 per cent.

• *Standard steel's unsurpassed ability to produce weldless rings all the way up to 144" O.D. is one of SIX REASONS WHY YOU SHOULD ALWAYS CALL STANDARD STEEL FOR RINGS AND FLANGES:*

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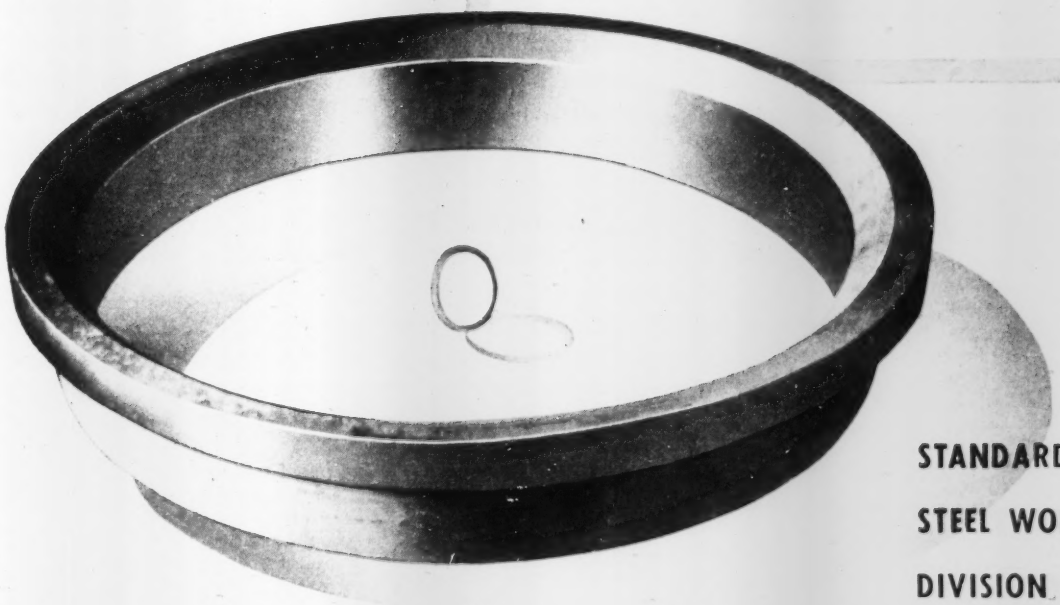

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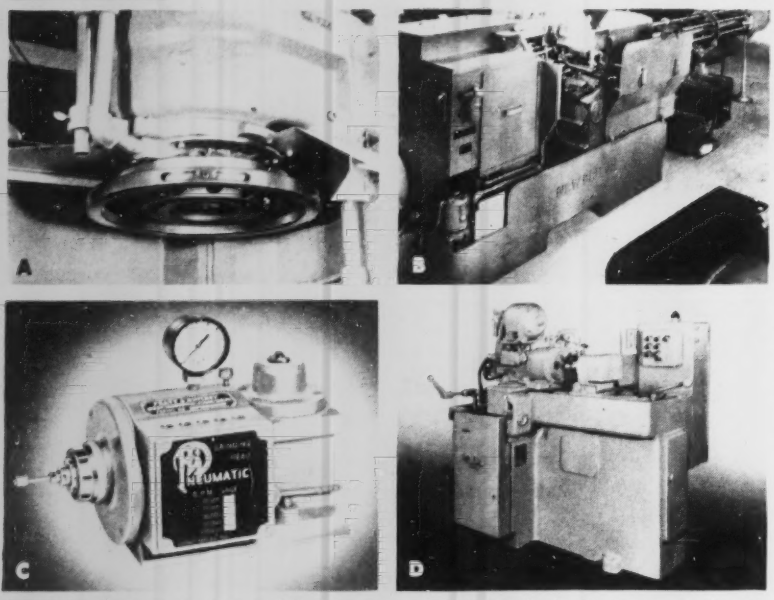


Berylco beryllium copper plays a vital role in many production tools. As, for instance, in the: (a) Blanchard Surface Grinder; (b) New Britain Gridley 6-Spindle Automatic Screw Machine; (c) Pratt & Whitney Pneumatic High Speed Grinding Head; (d) Chucking Grinder. For parts used, see below.

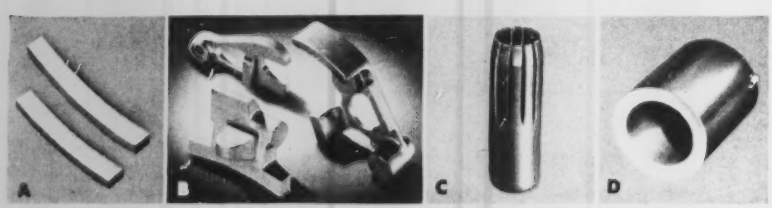
BERYLLIUM COPPER . . . a miracle metal with down-to-earth capacities

The miraculous quality of Beryllium copper is its versatility. Here, in one alloy, are combined such properties as strength, conductivity, elasticity and fatigue resistance. Ask makers of production tools why they choose Berylco. You'll get dozens of reasons. Economy. Ease of production. Hardenability, etc., etc. But it is the capacity of Berylco to make a better product—one that delivers long life with minimum maintenance—that is its outstanding appeal.

In the automatic screw machine shown above, wear and expensive maintenance in the stock feeding mechanism was eliminated by replacing the offending parts with smaller, more efficient ones made of Berylco. In the chucking grinder, where this alloy is used for "plain" bearings in the cam follower rolls, the dense surface structure of Berylco makes possible an extremely accurate, frictionless bearing. The spring properties of Berylco are all important in the Pratt & Whitney grinding head, where it is used for a spring governor; and in the Blanchard, where it is used for wheel clamps. Because Berylco is corrosion resistant, these clamps do not have to be plated. The nonmagnetic properties of Berylco also eliminate sticking.

One of the best things about Berylco beryllium copper is its availability in any quantity or form you need. If you would like to find out what this unique alloy can do for you, write the world's largest producer of beryllium copper, THE BERYLLIUM CORPORATION, Dept. 3J, Reading 19, Pennsylvania.

Tomorrow's products are planned today—with Berylco beryllium copper



(a) Berylco spring clamps used in the solid wheel holder of a Blanchard Surface Grinder; (b) A few of the Berylco castings in the stock-feeding mechanism of the New Britain Automatic; (c) Berylco spring governor used in the Pratt & Whitney Pneumatic High-Speed Grinding Head; (d) Berylco bearings found in the cam follower rolls of the Chucking Grinder.

Tool Steel . . .

Tool Steel Prices, Page 142

New York Shipments of high speed and tool steel (excluding hollow drill steel) increased in August, reports the American Iron & Steel Institute. Movement for the month totaled 9386 net tons, including shipments to industry members for conversion or resale. This compares with 8725 tons the preceding month. In August, 1952, shipments were 9818 tons.

Total shipments in the first eight months this year were 82,745 net tons, a decline compared with 83,195 tons shipped in the like period of 1952.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 138

Seattle Bulk of reinforcing bar business consists of lots of less than 100 tons each. Volume has declined, but backlogs, though down, are still fairly substantial.

Structural Shapes . . .

Structural Shape Prices, Page 138

Boston Substantial increase in bridge inquiry involves the largest tonnage in months for state highway spans. Bulk of this work will be fabricated in second quarter next year. Military requirements are marked by stronger demand for hangars, approximately 3500 tons. Public and private construction is slow.

Competition for fabricating contracts is sharp. Larger shops' backlogs extend through first quarter and those of smaller shops about three months. This is reflected in prices to some extent.

New York Considering the rather advanced building season, structural steel market activity is holding up well. Few outstanding orders were noted over the past several days, but inquiry is described as good and includes a fair amount of building work, as distinguished from bridges.

Pittsburgh Structural shapes remain in tight supply although some additional tonnages are being offered. A large backlog of construction indicates quotas will have to be retained through first quarter. Slight relief is seen afforded users in reported plans of a nearby mill to divert semi-finished steel from its tin mill to its standard structural mill for production of modified wide flange sections ranging up to about 16 inches. This rumored move is prompted by seasonally low demand for tin plate and will last only through November.

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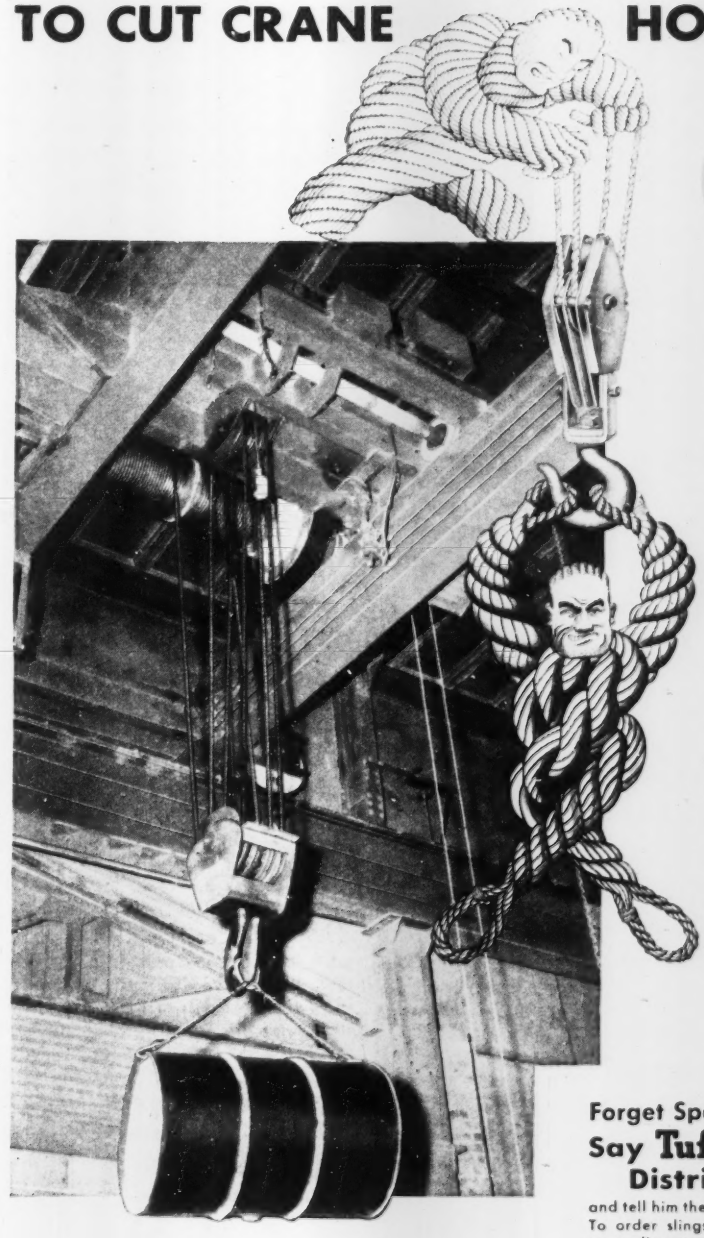

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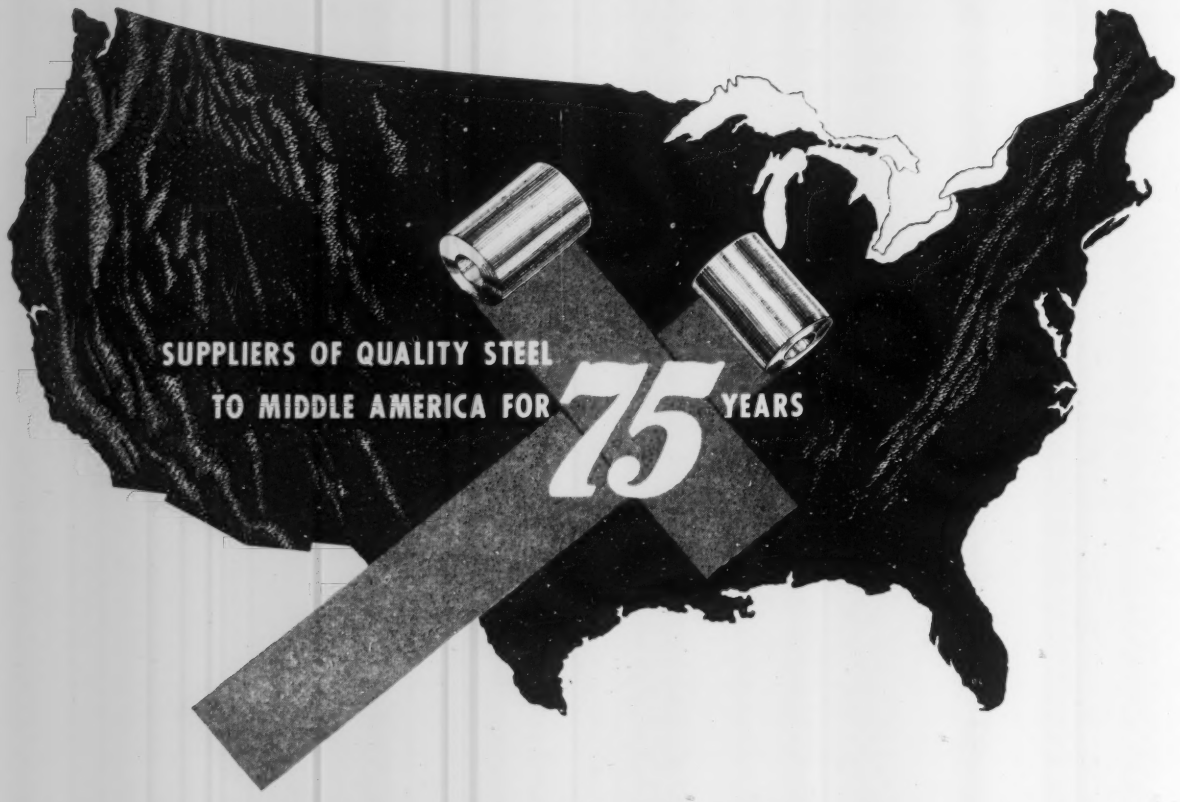

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Recognition comes hard here in the Middle West . . . but a reputation, once built, stands fast. We are glad that in this, our 75th year, grandsons of our first puddlers are producing steels and steel products for grandsons of our original customers. To us, it shows enduring faith in business reputation built the lasting way . . . through a record of technical accomplishment and service rendered.

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Steel Bars . . .

Bar Prices, Page 138

New York—Supply of large carbon rounds has eased considerably. Some leading sellers now offer deliveries in November and December. This results particularly from substantial cutbacks in the shell program. Producers also have capacity available in late November and December for bar flats.

Bars in coils are in rather tight supply. Bolt and nut makers' requirements of coils are down sharply, but cold drawers are still specifying fairly freely, as are certain other major consumers.

Despite cutbacks and cancellations, most of which already have offset the carryover from third quarter, bar producers anticipate active operations over remainder of the year.

Boston—Carbon bar producers are meeting scheduled requirements with deliveries improved. There are scattered openings in hot-rolled schedules for late this quarter. Supply of large size rounds is improving. Heavy flats now are in the most difficult supply position of the bar mill products.

Distribution of hot-rolled bars from Morrisville, Pa., is expected to start in December.

Watertown arsenal is asking bids Oct. 21 on 5000 tons, carbon bars for remelting. Specifications are for 1¾-inch squares, 40 inches long with rounded corners.

Philadelphia — Hot-rolled carbon bar sellers are still experiencing order cutbacks and cancellations. Reduction in shell work has eased the situation in large rounds considerably, and the increasing lag in automotive requirements is contributing to a slowing up in demand for a variety of sizes. Nevertheless, some consumers have cut inventories too sharply and as a result are buying somewhat more actively.

Pittsburgh—Following recent easing in the bar market, energetic selling is required to secure orders. Sales to automakers, unusually strong this summer, are now weak. Producers hope for a return to normal soon. Consumption of cold-finished bars has increased, promising well for the future, but alloy bar sales are low.

Cleveland—Demand pressure on the bar mills has eased with military requirements cut back and a general move under way on the part of warehouses and consumers in general to watch inventories closely. Still, producers hold sufficiently heavy backlogs to support high-level opera-

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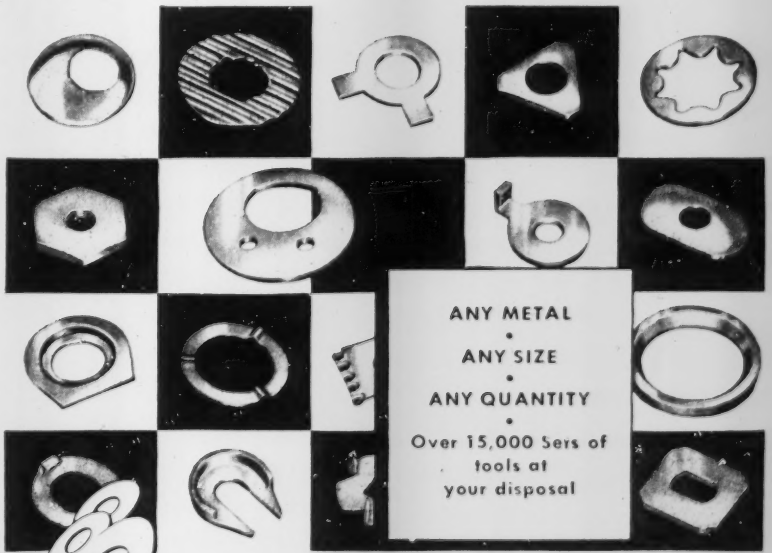

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tions into first quarter, and bookings for that period are reported coming in at a satisfactory rate.

Cincinnati Stocks of alloy bars are piling up while the larger rounds in carbon bars are scarce. Business is good. Prices are firm but freight absorption is beginning to show.

Chicago Supply of small bars has definitely caught up with demand and this fact is responsible for the reduced ingot-making rate at some mills. Reduced requirements of the farm equipment industry set the stage but cutbacks by automakers proved the clincher. A minor factor was some tonnage of small foreign bar shapes coming in at prices under domestic delivered levels.

Wire . . .

Wire Prices, Page 110

Cleveland Wiremakers are pressing sales effort in a drive to stimulate demand which has been on the downturn for some time past. Currently, a slight pickup in ordering of merchant products is noted, largely reflecting seasonal requirements.

Producers have open spaces in schedules though bookings are reported sufficient to support operations at comfortable levels, especially in manufacturers wire items.

Revision of Simplified Practice Recommendation R47-49, Cut Tacks and Small Cut Nails, as proposed by the American Institute of Tack Manufacturers, has been submitted to producers, distributors and users for review and acceptance. This recommendation gives designations, dimensional standards, packaging, and finishes for a wide variety of cut tacks and small cut nails broadly classified as hardware and shoe finders lists. Except for double-pointed tacks, the recommendation covers tacks and small cut nails cut from tack plate.

In addition to the elimination of certain finishes and packages in the hardware list, the essential revision is the change in designating lengths from 8ths to 16ths of an inch, and in the addition of electrogalvanized and hot galvanized finishes for certain kinds.

Boston New automotive orders for finished wire products are slightly higher but November bookings are slow. Buying for model changes is not impressive. Demand for manufacturers wire is 35 to 40 per cent under that in first half of year, orders being mostly fill-in sizes for prompt delivery. Consumer inventories are being shaken out.

The leading producer of rope products reduced its discount to distributors on direct shipments from 20 to 10 per cent.

Plates . . .

Plate Prices, Page 138

Chicago Light plates up to about ⅝-inch thick are in tight supply position and are expected to remain so through fourth quarter. Heavier plates are in better supply with some producers but not with others.

Los Angeles Distributors and fabricators are ordering all the plate they can get. Kaiser Steel Corp.'s plate carryover will extend into first quarter.

Boston Plate mills, generally, are booked through fourth quarter but supply has eased to the point consumers no longer take substitutes. They order to specification and will not accept flange or fire-box quality if mild steel is wanted.

A small number of plate fabricators turned down December tonnage, but this volume was readily sold to others. There is somewhat stronger demand for light gage plates in the more extreme widths. Weldment shops' needs are covered through fourth quarter, heavy plates included.

New York Although not as active as a month ago, plate demand is good. Inquiry for wide light plates ranging up to ½ inch in thickness, remains particularly brisk. Much of this tonnage goes into fabricated pipe, light tanks and, to more or less limited degree, freight cars, building of which remains on a fairly restricted scale. However, if the plea of James K. Knudson, defense transport administrator, is heeded, the railroads will add 76,000 cars to their present equipment by July 1, next year. He says present rolling stock is inadequate for peacetime needs to say nothing of defense requirements.

Philadelphia While some plate tonnage is available for delivery in the current quarter, particularly premium-priced material, few producers doubt they will be unable to maintain high operations over remainder of the year. Some view first quarter prospects optimistically. They look for good requirements from pipe fabricators, tank shops and structural fabricators.

Pittsburgh Light and heavy plates remain tight to the extent that quotas will probably be retained on shipments throughout first quarter. Additional tonnage offers are being made from time to time.

Seattle Plate producers are awaiting opening of bids here Oct. 14 for

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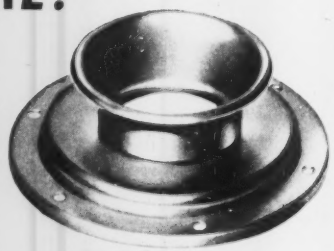

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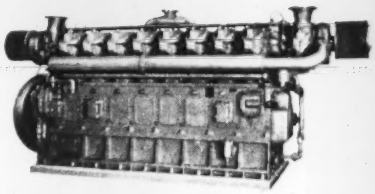
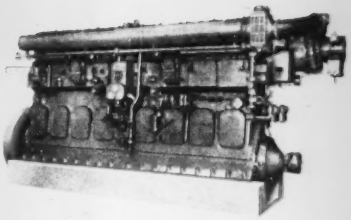


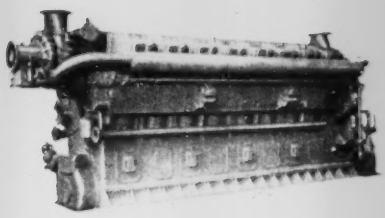
TYPE FVA — 8, 12 or 16 cyl.

Diesel — Atmospheric	430 to 1150 hp.
Diesel — Supercharged	1110 to 2230 hp.



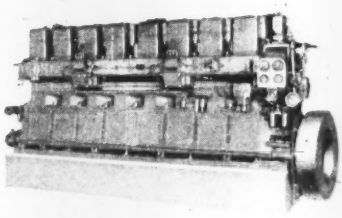
TYPE LS — 6, 7 or 8 cyl.

Atmospheric and Supercharged	
Gas	720 to 2500 hp.
Diesel	825 to 2500 hp.
Gas-Diesel	825 to 2500 hp.



TYPE LSV — 12 or 16 cyl.

Atmospheric and Supercharged	
Gas	1440 to 5000 hp.
Diesel	1650 to 5000 hp.
Gas-Diesel	1650 to 5000 hp.



TYPE IS — 5, 6, 7 or 8 cyl.

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Gas	375 to 1815 hp.
Diesel	430 to 1815 hp.
Gas-Diesel	430 to 1815 hp.

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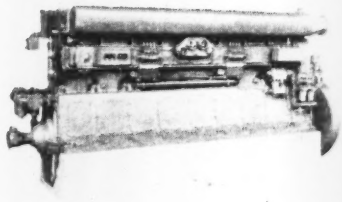
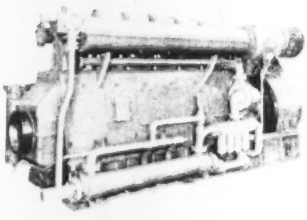


TYPE GS — 5, 6 or 8 cyl.

Atmospheric and Supercharged	
Gas	320 to 1460 hp.
Diesel	300 to 1460 hp.
Gas Diesel	300 to 1460 hp.



TYPE FW — 6 cyl.

Diesel — Atmospheric	245 to 500 hp.
Diesel — Supercharged	350 to 835 hp.

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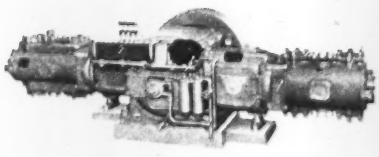
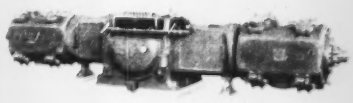
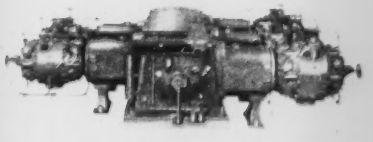


TYPE EM
To 350 hp.
9" stroke
Speed to 514 RPM



TYPE FM
To 1500 hp.
10½" stroke
Speed to 514 RPM



TYPE JM
500 to 3000 hp.
14" stroke
Speed to 327 RPM

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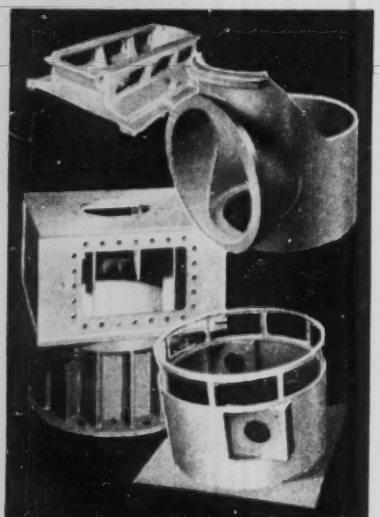


Fabricated Weldments, Bases and Sub-Assemblies are demanded by industry today because they insure accuracy, economy and modern design. They provide strength that withstands shock, strain, vibration, reduces machining and weight.

Littleford Fabricated Weldments, Bases and Sub-Assemblies are backed by years of experience in shearing, bending, forming, welding and finishing plate and sheet metals. Littleford has never lost sight of the fact that accuracy and quality are essential to the finished product. If you have a problem involving Fabricated Weldments, Bases or Sub-Assemblies, send blueprints to Littleford and see how experience can give low-cost quality products.

FABRICATORS OF PLATE AND SHEET METAL PRODUCTS FOR INDUSTRY SINCE 1882

LITTLEFORD
LITTLEFORD BROS., INC.
425 E. Pearl St., Cincinnati 2, Ohio

the petroleum pipeline from Haines to Fairbanks, Alaska. The project involves in excess of 40,000 tons of plates, several thousand tons of shapes and cast iron pipe, as well as equipment and machinery.

Rails, Cars . . .

Track Material Prices, Page 141

New York—New York Central railroad closed bids Oct. 15 on 75,000 gross tons of rails for 1954 delivery.

Tubular Goods . . .

Tubular Goods Prices, Page 141

Boston—Tubular products, following easing in butt weld pipe, are near balance, including medium sizes of seamless, mechanical and pressure tubing.

Distributor inventories are well rounded. At secondary levels most tubular goods are competitive with more tonnage offered, notably light walled electric welded on which

(*Please Turn to Page* 161)

Steel Production Off in September

Output in month is smallest in over a year but record is set in first three quarters of 1953. Industry producing at indicated annual rate of 109 million net tons

New York—Production of 8,913,000 net tons of ingots and steel for castings in September brought output for the first nine months of this year to 85,540,189 net tons, reports the American Iron & Steel Institute.

September output was the smallest for any month since August, 1952, when the industry was beginning to recover from the steel strike. Output for the month compares with 9,405,580 tons in August and 9,063,287 tons in September a year ago.

The furnaces operated at 92.4 per cent of capacity during the month, against 94.2 in August and 102 in September, 1952.

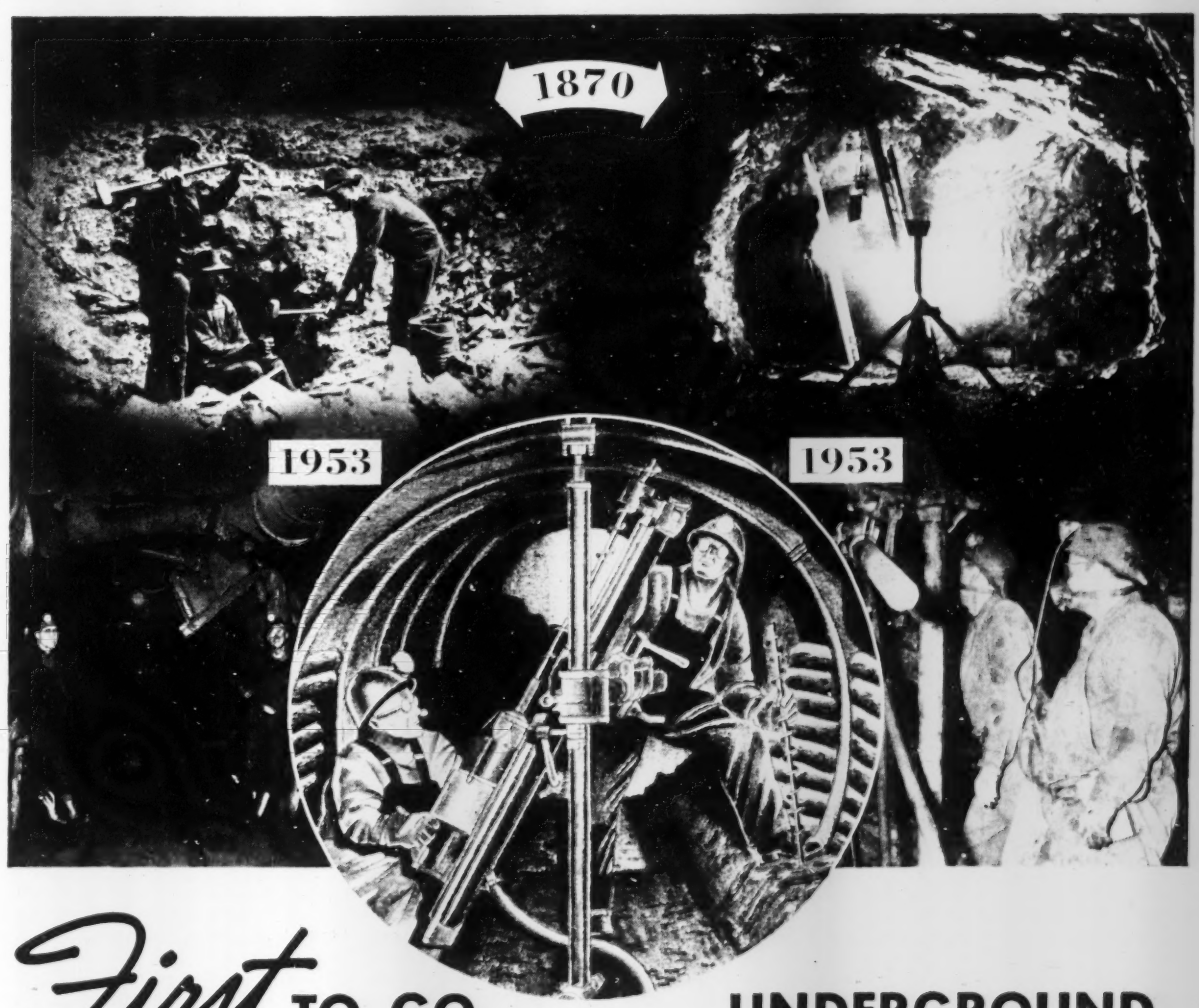
Despite the September decline, the first three quarters of this year set a record for any similar period, production being 33 per cent greater than the 64.2 million tons produced in the like three quarters of 1952. During the period the steelmaking furnaces operated at 97.3 per cent, comparing with 79 per cent in the like 1952 period.

Annual steelmaking capacity at the start of 1953 was approximately 9 million tons larger than at the beginning of 1952. Consequently, as much steel can be produced this year at 92.4 per cent of capacity operations as could have been made last year at 100 per cent capacity production. September output this year was equivalent on an annual basis to production of nearly 109 million tons.

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (net tons)	No. of weeks in mos.
1953	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity		
January	8,841,679	101.4	350,000	88.9	706,083	81.2	9,897,962	99.1	2,234,303	4.43
February	7,939,299	100.8	329,489	92.6	664,091	84.6	8,932,779	99.1	2,233,195	4.00
March	9,050,773	103.7	354,710	90.0	762,615	87.7	10,168,098	101.8	2,295,282	4.43
1st Qtr.	25,831,751	102.0	1,034,299	90.4	2,132,789	84.5	28,998,839	100.0	2,254,964	12.86
April	8,493,909	100.5	334,605	87.7	717,024	85.2	9,545,538	98.7	2,225,067	4.29
May	8,926,163	102.3	354,577	90.0	717,340	82.5	9,997,080	100.1	2,266,677	4.43
June	8,394,502	99.4	332,060	87.0	677,917	80.5	9,404,479	97.2	2,192,186	4.29
2nd Qtr.	25,813,574	100.8	1,021,242	88.3	2,112,281	82.7	28,947,097	98.7	2,224,988	13.01
1st 6 Mo.	51,645,325	101.4	2,055,541	89.3	4,245,070	83.6	57,945,936	99.4	2,239,889	25.87
July	8,316,312	95.5	324,068	82.4	635,263	73.2	9,275,673	93.1	2,098,569	4.42
*August	8,103,156	97.0	319,074	78.7	632,351	72.7	9,405,580	94.2	2,123,156	4.43
†Sept.	8,079,000	95.9	288,000	75.7	546,000	65.0	8,913,000	92.4	2,082,009	4.28
3rd Qtr.	24,498,497	96.1	922,142	79.0	1,813,614	70.4	27,594,253	93.2	2,101,619	13.13
9 Mos.	76,503,822	99.6	2,977,683	85.9	6,058,684	79.2	85,540,189	97.3	2,193,338	39.00
1952										
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,824,524	89.1	27,200,724	100.7	2,092,363	13.00
April	7,101,193	91.1	323,006	73.2	567,935	84.1	7,992,140	89.7	1,862,970	4.29
May	7,291,865	90.6	318,642	69.9	595,135	85.3	8,205,642	89.2	1,852,289	4.43
June	1,446,927	18.6	22,862	5.2	170,000	25.2	1,639,789	18.4	382,235	4.29
2nd Qtr.	15,839,991	67.9	664,510	49.6	1,333,070	65.1	17,837,571	66.0	1,371,066	13.01
1st 6 Mo.	40,047,320	84.8	1,833,381	68.5	3,157,594	77.1	45,038,295	83.4	1,731,576	26.01
July	1,347,587	16.8	2,000	0.4	277,505	39.9	1,627,446	17.7	368,200	4.42
August	7,599,388	94.4	309,361	67.8	490,476	84.6	8,499,725	92.4	1,918,674	4.43
Sept.	8,039,128	103.4	351,620	79.8	672,539	99.8	9,063,287	102.0	2,117,590	4.28
3rd Qtr.	16,986,603	71.2	662,981	49.1	1,440,874	74.5	19,190,458	70.4	1,461,573	13.13
9 Mos.	57,033,923	80.2	2,496,362	62.9	4,598,468	76.2	64,228,753	79.0	1,641,000	39.14

Note: The percentages of capacity in 1953 are calculated on weekly capacities of 1,969,275 net tons open-hearth, 88,934 net tons bessemer and 196,250 net tons electric ingots and steel for castings, total 2,254,459 net tons; based on annual capacities as of Jan. 1, 1953, as follows: Open-hearth 102,677,980 net tons, bessemer 4,637,000 net tons, electric 10,232,490 net tons, total 117,547,470 net tons. The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 137,477 net tons electric ingots and steel for castings, total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons.

*Revised
†Preliminary figures, subject to revision



First TO GO UNDERGROUND

IN THE ORE MINING FIELD

Between 1850 and 1865 the iron ores of Michigan were produced by the open pit method. As the surface ore was mined, Cliffs engineers saw that underground mining would be practical to reach the vast ore deposits lying beneath the surface. In 1866 the first underground mine was begun by The Cleveland-Cliffs Iron Company. Deep shaft mines . . . some of them reaching more than a half mile below the surface . . . have become wide-spread on the Marquette Range. These modern methods of mining, mechanized giants, are a far cry from the pick and shovel period of mining. TODAY AND TOMORROW CLIFFS ORE WILL BE AN IMPORTANT FACTOR IN THE BUILDING AND DEVELOPMENT OF OUR NATION.

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THE Cleveland-Cliffs IRON COMPANY

UNION COMMERCE BUILDING • CLEVELAND 14, OHIO

CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa., $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton $200, Clairton, Duquesne, Johnstown and Sheridan, Pa.; add or subtract $2.60 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.
(Mn 76-80%) 13.15c per pound of contained Mn, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland, Oreg.
(Mn 79-81%) Lump $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

Low Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max 75% C, max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium Carbon Ferromanganese: (Mn 80-85, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lots 22.9c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 31.5c; ton lots 33.5c; 250 to 1999 lb, 35.5c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk. 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6.8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium Carbon: (Ti 17-21%, C 2-4.5%). Contract $190 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High Carbon Ferrochrome: Contract, c.l., lump, bulk 24.7c per lb of contained Cr, c.l. packed 25.6c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.02% C (simplex) 34.5c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. S M x D, bulk, 26.2c per lb contained Cr. Packed, c.l. 27.1c, ton 28.05c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, S M x D, 18.35c per lb of alloy, ton lot 19.2c, less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 1" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon, f.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-30%, Al 7-9%, C 0.05% max). 25.75c per lb of contained chrome plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract, 1" x D, packed, max 0.50% carload $1.12, ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2.5% max, C 0.5-1% max) $3.10. **Primos and High Sped Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 75, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump bulk, 20.0c per lb of contained Si, packed 21.0c, ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.4c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low Aluminum 50% Ferrosilicon: (Al 0.40% max) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.2c.

Silicon Metal: (Min 97% Si and 1% max Fe) c.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.3c for max. 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-13%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk, 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20, Grade C (18% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%)—contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.6c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.2c, ton lot 14.05c, less ton 14.9c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.6c, per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet. Packed c.l. 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.
(Small size. Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c. Packed c.l. 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquetts: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 10,000 lb W or more, $1.35 per lb of contained W; 2000 lb W to 10,000 lb W, $1.45; less than 2000 lb W, $1.57, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $6.10 per lb of contained Cb, less ton $6.45. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 4c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, 4" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c, less ton lots 20c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 9-11%). C.l. packed 15c per lb of alloy; ton lots 16.50c, less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

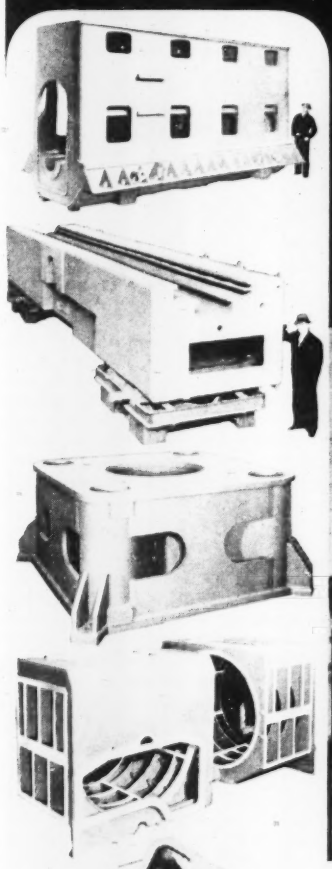
Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 14.50c. Packed c.l. 15.50c, ton lots 16.75c, less ton lots, 16.25c per lb of alloy. Delivered.

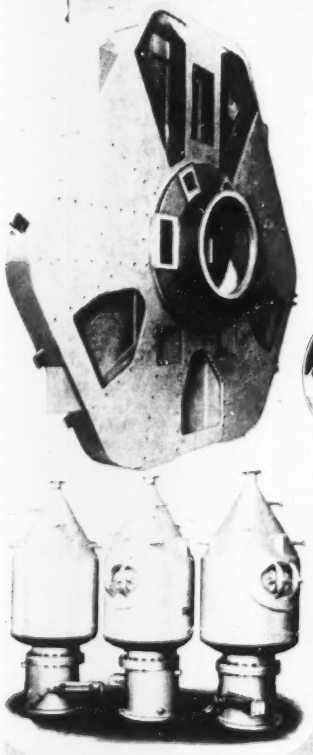
Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb. contained Mo, f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb. contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

Steel-Weld FABRICATION





Illustrated here you see a few typical examples of thousands of Steel-Weld Fabricated parts and assemblies produced and machined by Mahon for hundreds of manufacturers of heavy machines and other mechanical equipment. If parts of your product could be redesigned and produced to better advantage through Steel-Weld Fabrication, or, if you require a limited number of large heavy pieces, in which pattern costs are a consideration, you can turn to Mahon with complete confidence . . . personnel and facilities are available within the Mahon plant to do the complete job from drawing board to finished machining. You will find in the Mahon organization a unique source with complete ultramodern fabricating, machining and handling facilities to cope with any type of work regardless of size or weight . . . a source where skillful designing and advanced fabricating technique are supplemented by craftsmanship which assures a smoother, finer appearing job embodying every advantage of Steel-Weld Fabrication. See Mahon's Insert in Sweet's Product Design File, or write for further information.

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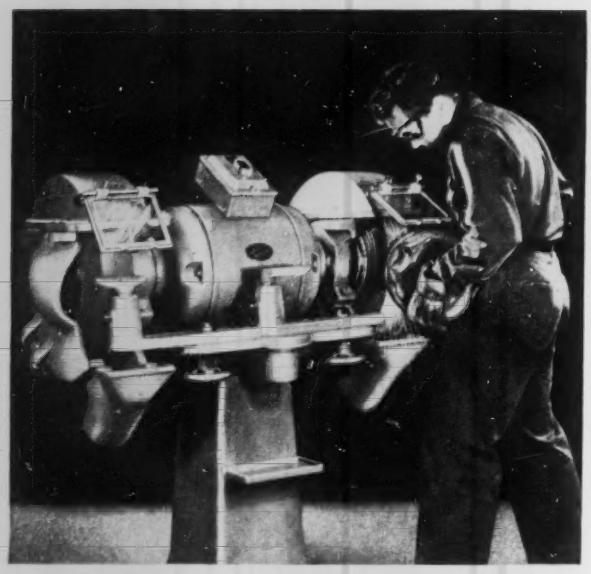

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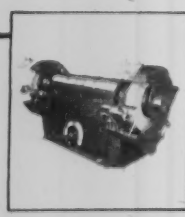

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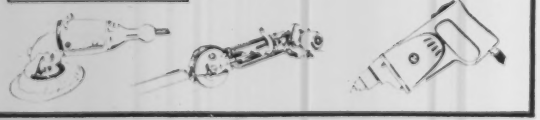
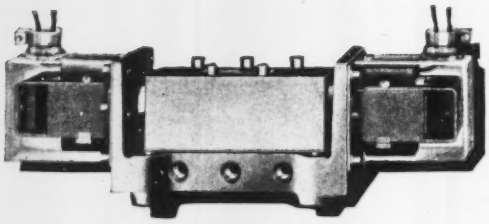


Quick-As-Wink AIR AND HYDRAULIC Control Valves

FEATURE THIS MONTH



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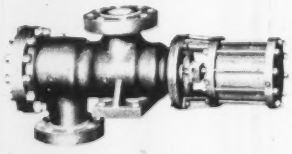
Their reduced amperage requirement simplifies electrical circuits

● These valves are extremely simple in design — but ruggedly built — and will give millions of cycles of efficient, trouble-free, dependable operation. For air to 125 psi, vacuum, or low pressure hydraulic service. Up to 300 cycles a minute. Solenoid armature bears directly against the valve plunger eliminating levers, links, pins, etc. Low amperage requirement simplifies the electrical circuit. The valve is reversed by energizing first one solenoid, then the other. The valve and both solenoids are mounted on an aluminum base, and can be removed independently without disturbing the piping. 2-way, 3-way, double 2-way, 4-way and 5-way actions.

also the following



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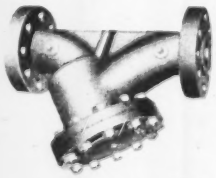
HIGH PRESSURE STRAINERS

Used ahead of descaling valves to prevent foreign material from plugging spray nozzles causing scale streaks in strip — also in hydraulic lines to protect valves, cylinders, and other machinery. 1½" to 6" sizes. Highly efficient. Easily cleaned.



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ORES-COKE-REFRACTORIES

Prices as reported to STEEL; *changes shown in italics.*

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematite (spot)	24.00-26.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$55.00
Domestic scheelite, mine	63.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00
South African Transvaal	
44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00
Brazilian	
44% 2.5:1 lump	nom. $32
Domestic (Rail nearest seller)	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oonk Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109.00; Salina, Pa., $114.00; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115; Warren, O., Hays, Pa., $120; Niles, O., $123; E. Chicago, Ind., Joliet, Rockdale, Ill., $125; Cutler, Utah, $116.55, Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213, Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109.00; Los Angeles, $110.25; Pittsburgh, Calif., $111.39.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140.00; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.00.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $174.00; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $179.00; Danville, Ill., $189.30.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $255; Danville, Ill., $258; Clearfield, Pa., $252.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $14.60; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connellsville, foundry	16.50-17.00
New River foundry	20.80
Wise county, foundry	15.95
Wise county, furnace	15.20

Oven Foundry Coke

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens	
New England, del.	*26.00
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, del.	27.58
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Buffalo, del.	26.50
Flint, del.	28.08
Pontiac, del.	28.23
Saginaw, del.	27.06
	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	40.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50
Per ton, bulk, ovens	
Sulphate of ammonia	$44-45
Birmingham area	$49.50
Cents per pound, ovens	
Phenol, 40 (c.l., nonreturnable drums)	17.25

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Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons; carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38. Imported, net ton, duty paid, metallurgical grade, $35-$36.

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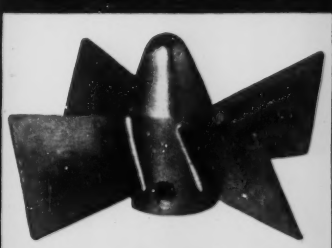
3	40	27.25
4	40	26.00
5¼	40	25.75
6	60	23.25
7, 8, 9, 10	60	21.00
12, 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.50
20	72	20.00

CARBON

40	100	$8.95
40, 35, 30	110	8.95
30	84	9.10
24	96	8.90
24	72, 84	9.10
20	90	8.95
20	84	9.10
17	72	9.10
17	60	9.50
14	72	9.50
14, 12.10	60	10.30
8	60	10.55

Rocket Fuse



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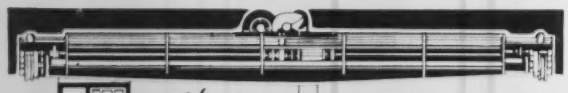

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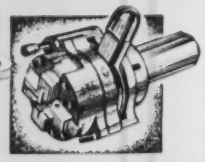

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Tubular Goods . . .

(*Concluded from Page* 154)

prices are soft in carbon grades. Volume of electric welded pipe is increasing with tonnage off the Morrisville, Pa., mill supplementing tonnage late this quarter. Springfield armory has bids on 461,517 feet seamless round, small diameter carbon tubing.

Pittsburgh Seamless tubing and oil country goods sell briskly, a bright spot in the tubular picture. Overall sales are not at the "normal" rate, and the market is undergoing a dormant period caused by a lingering inventory situation. Appliance and automakers are purchasing below their customary rates. Specialty, mechanical and pressure tubing sales are sticky.

Seattle Cast iron pipe demand is slow seasonally. Anchorage, Alaska, opened bids for about 100 tons. Some cast iron pipe is involved in the Alaska pipeline project, bids Oct. 14.

Pig Iron . . .

Pig Iron Prices, Page 142

Chicago Reduced foundry operations are developing no pessimism. Rather, the easing is serving to remove long-endured pressures. Inventories of iron are good and replacements can be obtained more quickly than formerly.

Pig iron output again exceeds consumption. Foundry operators aren't looking for a pickup in demand for farm equipment castings soon, but automotive requirements are expected to accelerate as new models get under way.

Boston Shipments to consumers lag. Few buyers are showing normal interest in bolstering winter reserves. More tonnage is offered by Buffalo and other outside furnaces in fringe areas where they are competitive. This area has broadened where fourth quarter price reductions have been larger than the 25 cents per ton decline on Everett iron, notably in western New England.

Lack of backlogs and failure to book heavier orders for castings are the primary reasons for slack demand.

New York Some foundries are talking a little more optimistically and their stocks of pig iron have been reduced substantially, but merchant sellers anticipate little important improvement in iron demand over the near future. Sellers, driving for business, have not increased their volume to any important degree.

Buffalo With 75 to 80 per cent of

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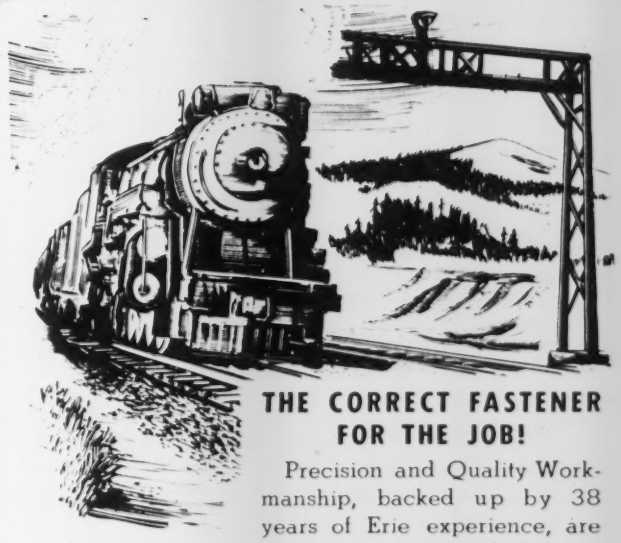

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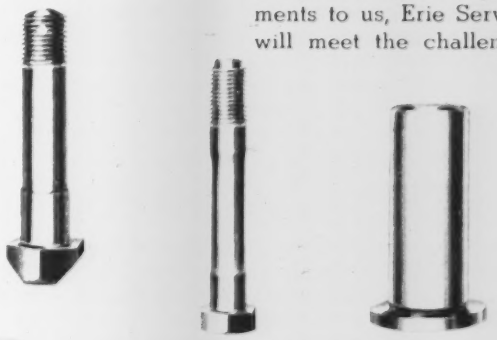

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current pig iron output going into steel production, blast furnace operations here hold at capacity levels. Merchant iron demand and foundry operations show mixed tendencies.

Philadelphia — Pig iron business continues slack. No changes are noted in domestic furnace base prices, but freight absorption in some instances is more noticeable, and prices on imported iron continue soft.

Cleveland — Spotty foundry operations are reflected in continued sluggishness in the merchant pig iron market. Sellers are moving tonnage but with many buyers watching inventories closely and ordering largely against needs in sight there is plenty of iron available to care for requirements, and promptly.

Cincinnati — Competition is keen among pig iron producers with some of them beginning to absorb freight charges. Foundrymen are dickering more on the purchase of pig iron.

Urge Scrap Export Licensing

Washington — The Commerce Department is being urged by the scrap industry to license iron and steel scrap exports.

In a message to Commerce Secretary Weeks the dealers, represented by the Institute of Scrap Iron & Steel, last week said that to severely restrict exportation of scrap while not limiting exports of pig iron and finished steel constitutes discrimination against the scrap industry.

Scrap . . .

Scrap Prices, Page 164

Philadelphia — Following the slight rebound in open-hearth scrap prices recently, the market has steadied. Most sellers now anticipate a fairly stable situation for some time. In fact, some believe the trend over the remainder of the year will be upward. Current steadiness applies to cast as well as steelmaking grades.

Buffalo — Although buying interest is restricted the scrap market shows steadier tendencies as a result of higher prices at other consuming points. All leading mill consumers remain out of the market but the top buyer announced partial lifting of its embargo on shipments. Prices are holding at the recently reduced levels. No new buying of consequence is anticipated in the immediate future.

Pittsburgh — Scrap prices were bolstered last week by a purchase which set the price of No. 1 bundles at $36 to $37. Demand remains steady for better scrap grades. On other grades, mill purchases are made in small volume, to round out inventories. Railroad grades declined slightly.

Cleveland — Scrap market undertone here has firmed up on reports of a large purchase of steelmaking grades in the Pittsburgh district at prices above those recently prevailing at that point. Despite absence of representative buying here, prices on steel grades are up $1 per ton sentimentally.

Trade sentiment is noticeably more optimistic with the view prevailing that prices have hit bottom.

Detroit — Scrap prices are unchanged from last week and no major sales have been made. Dealers indicate, however, that on the basis of talk in the area there is an undercurrent of strength which may be reflected in slight price increases on sales in the near future.

Chicago — The scrap market here developed a stronger tone with reports of higher prices being paid by consumers at Pittsburgh. It seems

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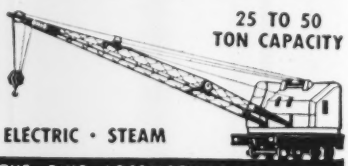

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unlikely, however, the new strength will be translated into higher buying prices until a leading mill comes into the market late this month for its November requirements.

In the meantime, other mills undoubtedly will hold the present line in whatever material they may acquire. Exception to the above is No. 1 dealer bundles for which $28 has been paid. This is an advance of $1. Another reflection of a firmer market tone is the fact that brokers are forced to pay more than present published quotations to fill existing orders.

Cincinnati — The scrap market is definitely stronger following some renewed buying. Prices in many instances are $2 to $3 higher.

Birmingham — Little demand for scrap is evident in this district. Small tonnage is moving.

Los Angeles — Mill purchases of scrap are limited to specialty grades.

San Francisco — Steel scrap is moving slowly to consumers. Yards are well stocked, but there is not much being added to the piles with collection discouraged by the low level of prices.

Seattle — No. 1 heavy melting steel is none too plentiful but it is moving at the lower prices recently effected. No. 2 heavy melting is quoted at $25. Bundles are down $4 and are in surplus supply.

Iron Ore . . .

Iron Ore Prices, Page 159

New York — Shipment of 150 tons of manganese ore from Maine has been made to Paterson, N. J. for testing at the E. S. Nossen Laboratories to establish whether ore can be processed economically for commercial consumption.

Cleveland — The Great Lakes fleet brought down 2,716,978 gross tons of iron ore in the week ended Oct. 12, boosting 1953 season shipments to date to 83,586,917 tons. This is only 16,413,083 tons from the projected season goal of 100 million tons, reports the Lake Superior Iron Ore Association.

In the corresponding week last year shipments amounted to 3,113,037 tons, but the cumulative season total was only 56,867,991 tons.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

6300 tons, repair shops, Pennsylvania Railroad, Hollidaysburg, Pa., to Belmont Iron Works, Eddystone, Pa.

STRUCTURAL STEEL PENDING

1,000 tons, building, American Stores, Dewitt, N. Y., bids closed.

500 tons, building, Penn Fruit Co., Philadelphia, bids Oct. 21.

400 tons, construction at Hanford Works, Washington state; bids to Baw-Knox Co., Pittsburgh, prime contractor, Oct. 20.

REINFORCING BARS . . .

REINFORCING BARS PLACED

140 tons, state highway projects, and local warehouse, to Northwest Steel Rolling Mills Inc., Seattle.

116 tons, Idaho road project and local mausoleum, to Bethlehem Pacific Coast Steel Corp., Seattle.

110 tons, grain elevator, Almira, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

225 tons, Washington state Union Slough highway bridge; general contract to Roy T. Farley Co., Tacoma, Wash., rebid low $295,749.

100 tons, Washington state Skagit county girder overcrossing; N. Florito Co., Seattle, awarded at $169,860.

100 tons, Idaho state bridges, Ada county, bids to Boise, Idaho, Oct. 20.

100 tons, Bureau of Roads, Smith River

(Please Turn to Page 166)

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Oct. 15	$32.50
Oct. 8	31.83
Sept. avg.	36.93
Oct. 1952	43.00
Oct. 1948	43.25

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	*40.00-42.00*
No. 2 heavy melting	*38.00-40.00*
No. 1 bundles	*40.00-42.00*
No. 2 bundles	*38.00-39.00*
No. 1 busheling	*40.00-42.00*
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Cut structurals	38.00-39.00
Heavy turnings	29.00-30.00
Punchings & plate scrap	38.00-39.00
Electric furnace bundles	38.00-39.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	38.00-39.00
Heavy breakable cast	36.00-37.00
Unstripped motor blocks	33.00-34.00
No. 1 machinery cast	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt	*39.00-40.00*
Rails, 2 ft and under	*40.00-41.00*
Rails, 18 in. and under	*41.00-42.00*
Rails, random lengths	44.00-45.00
Railroad specialties	42.00-43.00

Stainless Steel Scrap

18-8 bundles & solids	165-170
18-8 turnings	90-95
430 bundles & solids	57-59
430 turnings	50-52

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	*41.00-42.00*
No. 2 heavy melting	*39.00-40.00*
No. 1 bundles	*42.00-43.00*
No. 2 bundles	*39.00-40.00*
No. 1 busheling	*41.00-42.00*
Machine shop turnings	16.00-17.00
Mixed borings, turnings	21.00-22.00
Short shovel turnings	21.00-22.00
Cast iron borings	21.00-22.00
Low phos.	*42.00-43.00*
Alloy free, short shovel turnings	24.00-25.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	28.00-29.00
Stove plate	36.00-37.00
Heavy breakable cast	26.00-27.00
Unstripped motor blocks	*24.00-25.00*
Brake shoes	28.00-29.00
Clean auto cast	*45.00-46.00*
No. 1 Wheels	30.00-31.00
Burnt cast	29.00-30.00
Drop broken machinery	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt	*45.00-47.00*
R.R. malleable	45.00-46.00
Rails, 3 ft. and under	49.00-50.00
Rails, 18 in. and under	50.00-51.00
Rails, random lengths	42.00-43.00
Cut steel	*41.00-42.00*
Railroad specialties	*41.00-42.00*
Uncut tires	39.00-40.00
Angles, splice bars	44.00-45.00
Rails, rerolling	49.00-50.00

Stainless Steel
(F.o.b. shipping point)

18-8 bundles, solids	
18-8 turnings	nom. 160.00-170.00
430 clips, bundles, solids	nom. 70.00-80.00
430 turnings	nom. 50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	*28.00-29.00*
No. 2 heavy melting	*28.00-29.00*
No. 1 bundles	*28.00-29.00*
No. 2 bundles	*26.00-27.00*
Machine shop turnings	16.00-17.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Low phos.	35.00-36.00
Electric furnace bundles	32.00-36.00

Railroad Scrap

No. 1 R.R. heavy melt	36.00-37.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*31.00-32.00*
No. 2 heavy melting	*29.00-30.00*
No. 1 bundles	*31.00-32.00*
No. 2 bundles	*27.50-28.50*
No. 1 busheling	*31.00-32.00*
Electric furnace bundles	32.00-33.00
Machine shop turnings	19.00-20.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	26.00
Structurals & plate	36.00-37.00
Heavy turnings	30.00
Couplers, spring wheels	41.00-42.00
Rail crops, 2 ft & under	41.00-43.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Charging box cast	nom.
Heavy breakable cast	28.50
Unstripped motor blocks	28.00
Drop broken machinery	40.00-41.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	24.00-25.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	24.00-25.00
No. 2 bundles	20.00-22.00
Machine shop turnings	11.00-12.00
Mixed borings, short turnings	13.00-14.00
Low phos. (structural & plate)	27.00-28.00
Short shovel turnings	14.00-15.00

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unstripped motor blocks	21.00-22.00

Stainless Steel

18-8 sheets, clips, solids	160.00-165.00
18-8 borings, turnings	90.00
430 sheets, clips, solids	80.00-85.00
410 sheets, clips, solids	70.00-75.00

BOSTON

(Brokers' buying prices, f.o.b. shipping point)

No. 1 heavy melting	24.00-25.00
No. 2 heavy melting	*18.50-19.00*
No. 1 bundles	24.00-25.00
No. 2 bundles	*18.50-19.00*
Machine shop turnings	*12.00-12.50*
Mixed borings, turnings	*14.00-15.00*
Short shovel turnings	*14.00-15.00*
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	36.00-37.00

CINCINNATI

(Brokers' buying prices, f.o.b. shipping)

No. 1 heavy melting	*29.00-30.00*
No. 2 heavy melting	*27.00-28.00*
No. 1 bundles	*29.00-30.00*
No. 2 bundles	*24.00-25.00*
No. 1 busheling	*29.00-30.00*
Machine shop turnings	*15.00-16.00*
Mixed borings, turnings	*16.00-17.00*
Short shovel turnings	*16.00-17.00*
Cast iron borings	*16.00-17.00*
Low phos., 1% in	*37.00-38.00*

Cast Iron Grades

No. 1 cupola	*42.00*
Heavy breakable cast	*34.00*
Charging box cast	*37.00*
Drop broken machinery	*36.00*

Railroad Scrap

No. 1 R.R. heavy melt	32.00-33.00
Malleable	42.00-43.00
Rails, 18 in. and under	*47.00-48.00*
Rails, random lengths	*38.00-39.00*

CHICAGO

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	24.00-25.00
No. 1 factory bundles	30.00-31.00
No. 1 dealer bundles	*27.00-28.00*
No. 2 bundles	22.00-23.00
No. 1 busheling	29.00-30.00
Machine shop turnings	14.00-15.00
Mixed borings, turnings	14.00-15.00
Short shovel turnings	16.00-17.00
Cast iron borings	16.00-17.00
Cut structurals, 3-ft	32.00-33.00
Punchings & plate scrap	32.00-33.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades

No. 1 cupola	32.00-33.00
Stove plate	26.00-27.00
Unstripped motor blocks	19.00-20.00
Clean auto cast	36.00-37.00
Drop broken machinery	36.00-37.00

Railroad Scrap

No. 1 R.R. heavy melt	31.00-32.00
R.R. Malleable	40.00-41.00
Rails, 2-ft and under	43.00-45.00
Rails, 18 in. and under	41.00-46.00
Angles, splice bars	40.00-42.00
Rails, rerolling	42.00-43.00

Stainless Steel Scrap

18-8 clips & solids	*160.00*
430 clips & solids	*70.00*
18-8 turnings	*70.00*
430 turnings	*47.00*

DETROIT

No. 1 heavy melting	26.00
No. 2 heavy melting	23.00
No. 1 bundles	26.00
No. 2 bundles	23.00
No. 1 busheling	26.00
Machine shop turnings	12.00
Mixed borings turnings	12.00
Short shovel turnings	14.00
Punchings & plate scrap	30.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	33.00
Stove plate	34.00-35.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	40.00
Malleable	40.00

BUFFALO

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	33.00-34.00
No. 2 bundles	24.00-25.00
No. 1 busheling	37.00-38.00
Machine shop turnings	19.00-20.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	35.00-36.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	32.00-33.00
No. 1 machinery	37.00-38.00

Railroad Scrap

Rails, random lengths	39.00-40.00
Rails, 2 ft and under	45.00-46.00
Railroad specialties	45.00-45.50

BIRMINGHAM

No. 1 heavy melting	26.00-26.50
No. 2 heavy melting	24.00-24.50
No. 1 bundles	26.00-26.50
No. 2 bundles	22.00-22.50
Machine shop turnings	19.50-20.50
Short shovel turnings	*20.50-21.50*
Cast iron borings	*20.50-21.50*
Cut structurals	nom.
Electric furnace bundles	nom.

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	41.00-42.50
Charging box cast	30.00-31.00
Stove plate	38.00-39.00
Bar crops and plate	38.00-39.00
Cut structurals	36.00-37.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt	nom.
Rails, 2-ft and under	42.00-43.00
Rails, random lengths	39.00-40.00
Angles, splice bars	*43.00-44.00*
Rails, rerolling	46.00-47.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	23.00-24.00
No. 1 bundles	28.00-29.00
No. 2 bundles	21.00-22.00
Machine shop turnings	11.00-12.00
Short shovel turnings	12.00-13.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Charging box cast	27.00-28.00
Heavy breakable cast	27.00-28.00
Unstripped motor blocks	27.00-28.00
Brake shoes	36.00-37.00
Clean auto cast	37.00-38.00
Burnt cast	28.00-29.00

Railroad Scrap

Malleable	37.00-38.00
Rails, 18 in. and under	44.00-45.00
Rails, random lengths	33.00-34.00
Rails, rerolling	42.00-43.00
Uncut tires	31.50-32.50
Angles, splice bars	34.00-35.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	29.00
No. 2 heavy melting	*25.00*
No. 1 bundles	24.00
No. 2 bundles	19.00
No. 3 bundles	15.00
Machine shop turnings	*12.00-12.50*
Mixed borings, turnings	*12.00-12.50*
Short shovel turnings	*12.00-12.50*
Electric furnace, No. 1	38.00-40.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	30.00-35.00
Heavy breakable cast	25.00-30.00
Unstripped motor blocks	27.00
No. 1 wheels	38.00-40.00
Stove plate	26.00

Railroad Scrap

Rails, random lengths	34.00-35.00

SAN FRANCISCO

No. 1 heavy melting	24.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	19.00
No. 1 busheling	24.00
Machine shop turnings	7.00
Mixed borings, turnings	7.00
Short shovel turnings	13.00
Cast iron borings	13.00
Cut structurals	32.00
Heavy turnings	13.00
Punchings & plate scrap	33.00
Electric furnace bundles	24.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	29.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

LOS ANGELES

No. 1 heavy melting	24.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	19.00
Machine shop turnings	7.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	37.00-40.00

HAMILTON, ONT.

(Delivered prices)

Heavy melting	$32.50
No. 1 bundles	32.50
No. 2 bundles	32.50
Mechanical bundles	28.50
Mixed steel scrap	28.50
Mixed borings, turnings	26.50
Rails, remelting	32.50
Rails, rerolling	41.50
Busheling	26.50
Busheling new factory:	
Prep'd	30.50
Unprep'd	28.50
Short steel turnings	22.50

Cast Iron Grades

No. 1 machinery cast	46.00-50.00

†F.o.b. shipping point.

For power economy in press operation: A double-pressure pump, automatically lubricated, with totally-enclosed mechanism.

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Absolute Reliability... Maximum Delivery... Low Maintenance Cost...and Smooth Operation

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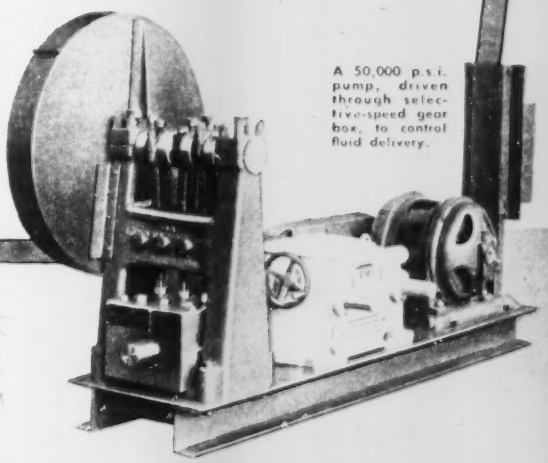

A 50,000 p.s.i. pump, driven through selective-speed gear box, to control fluid delivery.

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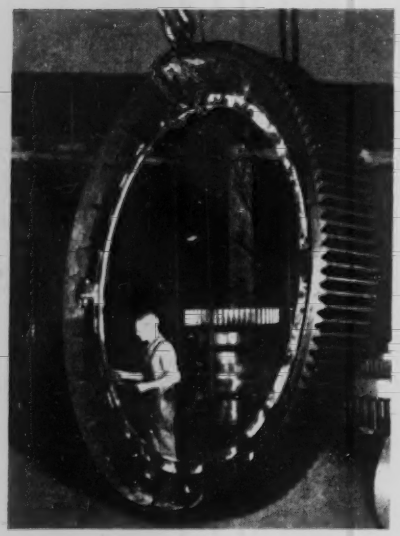

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- Mitre • Worms
- Worm Gears
- Racks • Pinions

With the experience of more than 60 years of gear-making specialization . . . Simonds is geared to give you fast, custom service in diameters up to 145". Count on Simonds for quick delivery on gears for new equipment . . . for special machinery . . . for repairs and replacements.

SIMONDS also is stock carrying distributor for Ramsey Silent Chain Drives and Couplings; and industrial V-Belts.

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bridge, Oregon; bids to Portland, Oreg., Oct. 23.

Unstated, 3° underground ammunition magazines, Ft. Richardson, Alaska; general contract to Morrison-Knudsen Co., Seattle, low $886,945.

PIPE . . .

CAST IRON PIPE PENDING

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PLANT MANAGER with 25 years' experience in Costs, Production and Management functions. M.I.T. graduate. Write Box 804, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Experienced in all phases and equipment—steel yard to finished product. M.E. degree. Employed desires change. Write Box 833, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Available after January first. Broad background in metal products. Sheet metal to very heavy steel, machinery, code vessels, etc. Capable administrator. Extensive organizational experience all phases of plant operation. Permanent proposition with medium sized company only. Age 49. College and vast practical experience. Minimum $12,000. Full details to detailed inquiries. Reply Box 828, STEEL, Penton Bldg., Cleveland 13, Ohio.

Help Wanted

Industrial steel warehouse located in large Southwest city, seeking manager, 35 to 55, experienced in all phases of warehouse operation. Write Box 832, STEEL, Penton Building, Cleveland 13, Ohio.

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Graduate engineer experienced in design and construction wanted to assume charge of engineering department of overhead traveling crane manufacturer. Must have executive ability. Give full details of experience, salary requirements, etc.

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USED AS IS RECONDITIONED

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Box, Steel Sheathed, 40-Ton Capacity
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Gondolas, Composite, or All Steel 50-Ton and 70-Ton
Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Ore Hoppers, All-Steel, 50-Ton, Heavy Duty
Tank, 3,000-Gallon, High Pressure
Tank, 8,000-Gallon, Coiled and Non-Coiled

Hoppers, All Steel, 70-ton, Triple Hopper Cross Dump

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

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Eight Wheel, Cupola Type

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Railroad Track Scales

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Side Dump, 20-Yd., 40-Ton, Lift Door
End Dump, 20-Yd., 50-Ton, Drop Door
Side Dump, 30-YD., 50-TON, DROP DOOR

STANDARD GAUGE DIESEL-ELECTRIC ROAD SWITCHING LOCOMOTIVE

300 H.P., 70-Ton, Type 0-4-4-0
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6,000 Gallon
8,000 Gallon
10,000 Gallon

"ANYTHING containing IRON or STEEL"

MANUFACTURING SUPERINTENDENT

Large West Coast manufacturer needs superintendent in flat polishing and deep draw press operations. Should have die design and some engineering experience. Excellent opportunity for right man. State past employment history and salary desired.

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STEEL
Penton Bldg. Cleveland 13, Ohio

SALES ENGINEER
or
MANUFACTURERS REPRESENTATIVE

Mid-west steel fabricating, welding and machining concern is in need of a man who is qualified to sell the above services.

Established contacts in this field are essential.

This is an excellent opportunity for an ambitious and aggressive man.

Full or part-time arrangement will be considered.

Replies held in strict confidence.

State in first reply if you are interested in full or part-time position and enumerate your experience in this field.

Write Box 835, STEEL
Penton Building Cleveland 13, Ohio

GENERAL SUPERINTENDENT

Wanted for Brazilian Steel Plant producing 50,000 tons annually of reinforcing bars and merchant products exclusively. The man we are looking for must have thorough experience in electric furnace practice, rolling mills, and general maintenance problems. Exceptional opportunity for the right man capable of taking complete charge of all melting, rolling and maintenance matters. Please submit complete details and references, as well as salary expected.

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New motors and starters of well-known makes, sizes ½ HP to 150 HP, available subject to prior sale. Quantities in excess of our present production requirements. Write for list.

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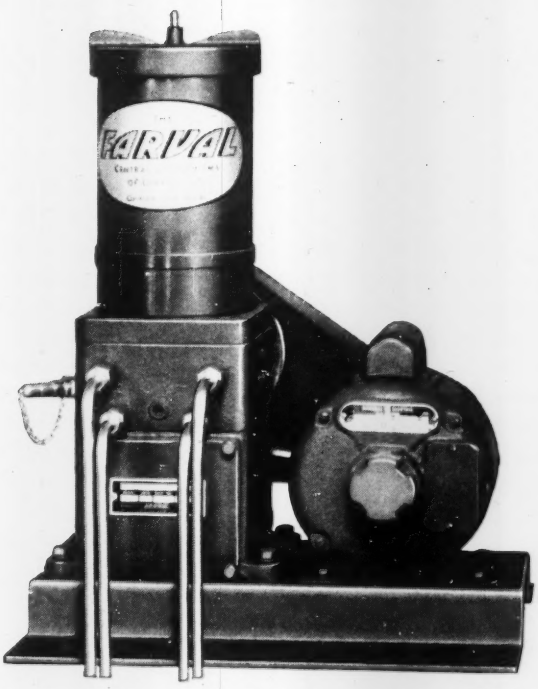
FARVAL—*Studies in Centralized Lubrication* No. 139

Farval Announces DC 20 Automatic Pumping Unit

for complete lubrication of smaller machines



ALL PARTS OF THIS NEW FARVAL DC 20 *automatic pumping unit are assembled on a single base plate ready for quick, easy mounting at any convenient point. Supply lines run from the pumping station to the Dualine measuring valve manifolds, one valve for each bearing to be lubricated. The entire system is installed very simply and at a cost that will be repaid in a few months in savings effected.*

NOW any small machine can have a completely automatic system of Farval centralized lubrication—as efficient and economical as the larger systems which have proved so valuable on heavy industrial equipment during the past 26 years.

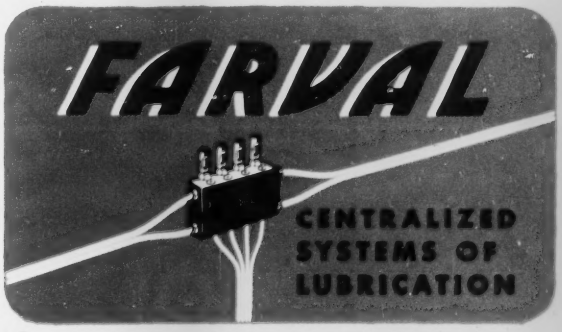
Chief component of this smaller, low cost system is the new Farval DC20 pumping unit which handles either grease or oil. In addition to the pumping unit, the complete Farval system consists of two main supply lines, the familiar Dualine measuring valves and discharge line connections from measuring valves to the bearings.

Easily installed at any convenient place on or near a machine, the DC20 insures automatic delivery of lubricant to bearings, as often as needed, in whatever quantities desired, while the machine is in operation. Remember that Farval—and Farval only—employs the Dualine valve that is fully adjustable—simple, sure and foolproof—with a positive indicator which visually signals that the valve has functioned.

Hundreds of operators using the larger Farval automatic systems have discovered that the entire cost of a system is saved the first year. Lubricant savings alone may run as high as 75%.

Investigate the new DC20. Near you is an experienced Farval lubrication engineer who will demonstrate how the new DC20 pumping unit can save time and money and increase production on your present hand-lubricated machines. Write today for a copy of Bulletin 39, "DC20 Pumping Unit for Smaller Machines". The Farval Corporation, 5270 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.



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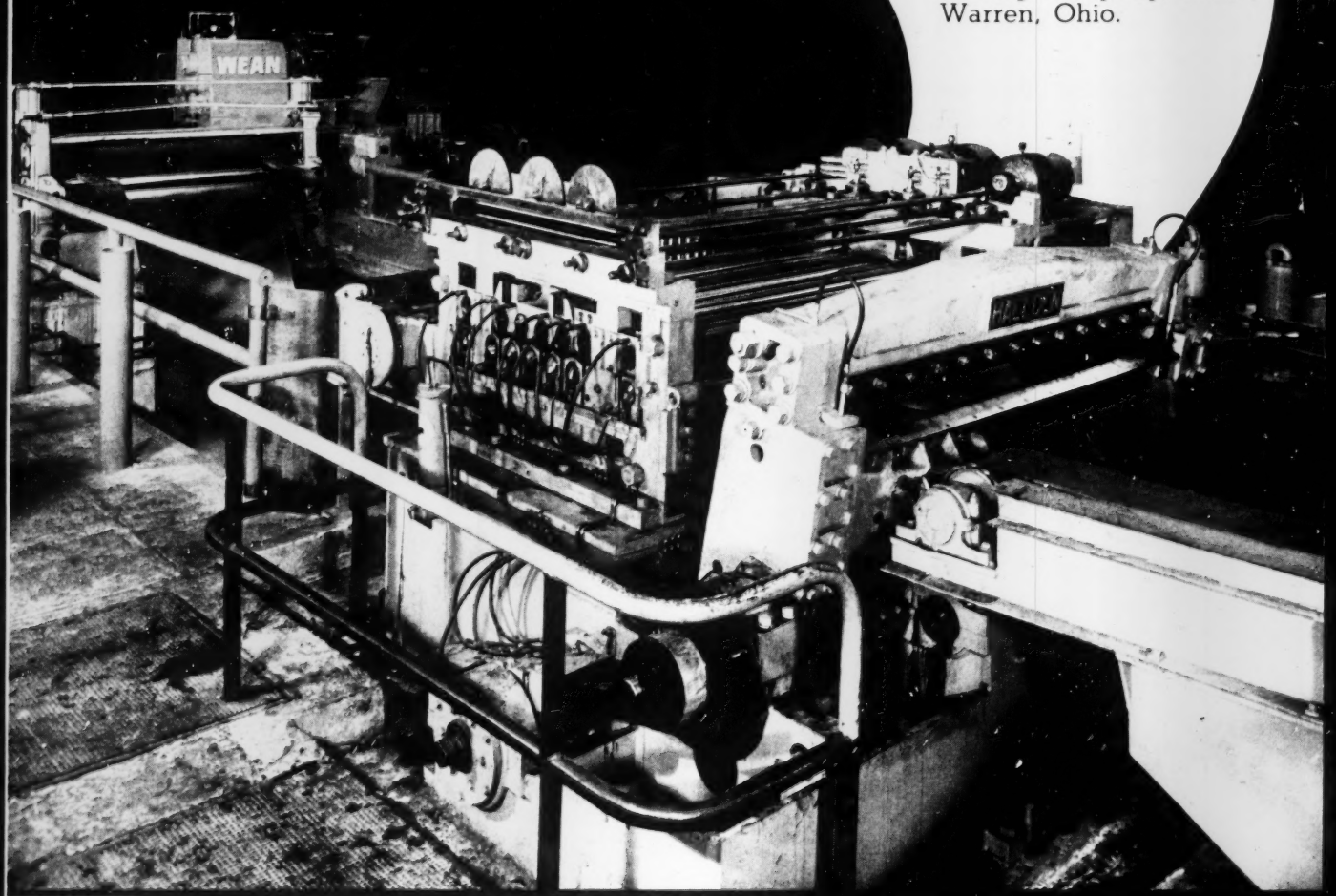
If you're looking for fast, accurate shearing, be sure you have all the facts on this amazing flying shear.

For complete information write to The Wean Engineering Company, Inc., Warren, Ohio.



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